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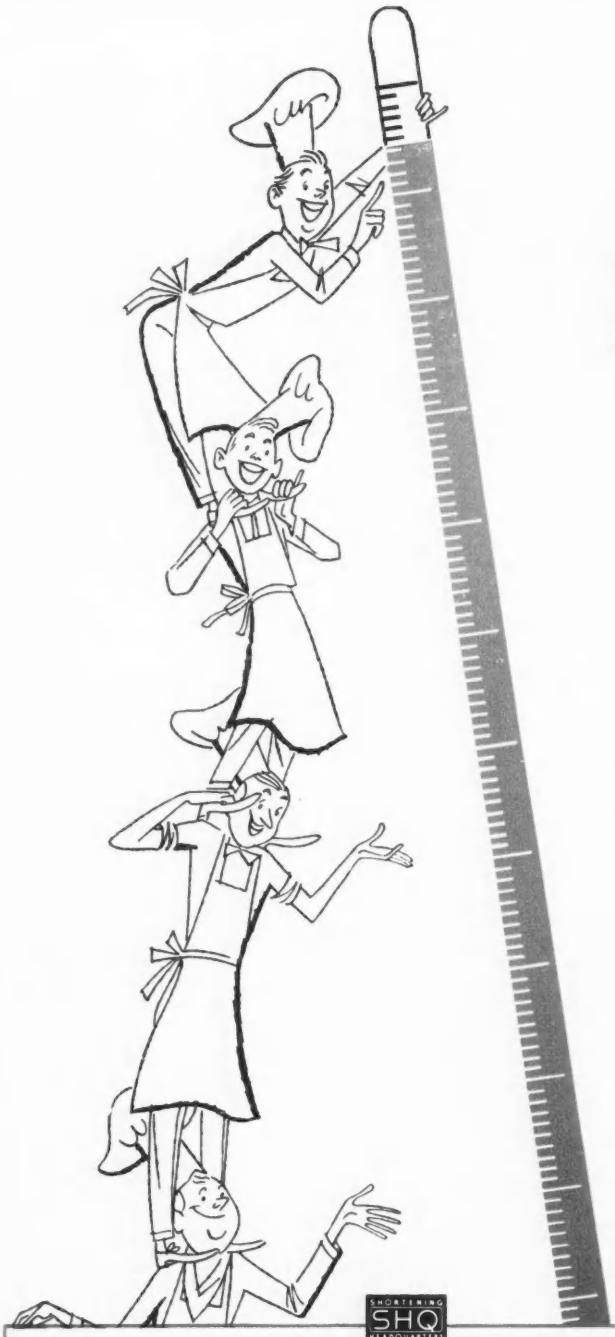

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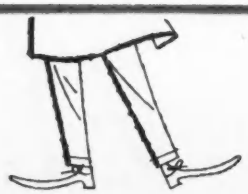

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Recent Advances in Nutrition Related to Surgical Care[1]

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Department of Nutrition, Harvard School of Public Health; Medical and Surgical Clinics, Peter Bent Brigham Hospital, Boston

NUTRITION is important in every aspect of medicine and health, for in its broadest sense it is essential to the growth, function, maintenance, and repair of body cells. In the United States today, prevention, control, and treatment of many of the common infectious diseases are well in hand. This leaves nutrition as the single most important environmental factor affecting our health. This statement does not refer to the historic nutritional diseases, such as scurvy; rather, it refers to the role of nutrition in the cause and therapy of obesity, arteriosclerosis, heart disease, hypertension, and cancer, and in convalescence from disease. These are the conditions that are most likely to affect your health and mine, and they are conditions importantly related to nutrition.

Many of the recent advances in nutrition find practical application in improving the nutrition of patients convalescing from disease and from surgery. We propose to discuss here the recent advances in nutrition related to abnormalities of nutrition during surgical care and their correction.

NUTRITIONAL ABNORMALITIES IN SURGERY

Good nutrition during surgical care, as at any other time, means intake of adequate amounts of protein, fat, carbohydrates, minerals, vitamins, and water. The difficulties in carrying out such a program are many.

What do we mean by "adequate amounts"? In most cases there is little in the way of factual data to support whatever figures are given. Protein is made up of some twenty-two amino acids; undoubtedly some are required in greater concentration than others, and all probably have a desirable ratio which is probably different in convalescence; but, again, there is insufficient information. The same comments apply in general to the fifteen minerals and some fifteen to twenty vitamins.

Becoming somewhat more realistic, abnormalities of nutrition encountered in surgical care are known to involve protein; calories; the minerals sodium, potassium, and chloride; and water. There is experimental evidence suggesting abnormalities in the physiologic activity of some of the water-soluble vitamins during shock. But, continuing to be realistic, a discussion of nutritional abnormalities during surgical care and their correction obviously must specify whether one is dealing with a well nourished or poorly nourished individual, whether the trauma has been moderate or severe, and whether we are talking about the first few days after surgery—that is, the postsurgical catabolic period—or after a few days, when one hopes for anabolism and rapid convalescence.

POSTOPERATIVE METABOLISM

In the calorically depleted patient who is having an unusually prolonged postoperative catabolic period, or who has passed this stage but for a variety of reasons must be fed largely by vein, the provision of an abundance of calories is desirable but difficult.

The empirical provision of nutrients to patients can only be justified by the lack of a precise picture of what the nutritional problems of surgical patients actually are. To have such a picture requires experimental knowledge about the metabolic responses of human subjects to surgery and other trauma. It is only from painstaking metabolic studies that we can begin to form a concept of what happens to the human body biochemically when it is subjected to severe trauma.

[1] The researches referred to in this paper which have been done in the laboratories of the Department of Nutrition, Harvard School of Public Health, have been supported in part by grants-in-aid from the Nutrition Foundation, Inc., New York City; the Upjohn Company, Kalamazoo, Michigan; National Cancer Institute of the National Institutes of Health, U. S. Public Health Service; the Research and Development Board of the Surgeon General's Office, U. S. Army, Washington, D.C.; and Armour and Co., Chicago. Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland, on October 11, 1951.

Fortunately, such studies are available, with many of them having been done by Dr. Fuller Albright and his students (1) at the Massachusetts General Hospital and more recently by Dr. Francis Moore and his colleagues (2) at the Peter Bent Brigham Hospital in Boston. From their studies and others, a broad pattern characteristic of what may be called the "normal" response to physical trauma has emerged. It is upon this pattern and its variations that surgical nutrition, if it is to be rational, must be based.

NITROGEN AND CALORIC DEFICITS

The immediate postoperative period in a well nourished individual has been found to be characterized nutritionally by a marked and persistent nitrogen deficit lasting sometimes as long as a week, a transient period of negative potassium balance, and an interval of relative sodium retention. A caloric deficit is, of course, present early in the postoperative period and frequently continues beyond the immediate postoperative period. During this time of caloric deficit, the basal calories required to sustain life amount to some 1500 calories per day in a normal adult and of necessity must come from body tissues—from protein and from fat. The result, naturally, is weight loss. During injury or disease, caloric requirements may be considerably more than 1500; thus more body tissue will be utilized and weight loss will be more rapid and more pronounced. However, it seems impossible for the body to obtain enough calories from its reserve of fat, even in an obese person, to prevent appreciable amounts of protein, either tissue or dietary, from being used for caloric purposes rather than tissue synthesis, and hence to prevent a negative nitrogen balance. Thus there is the need for a considerable number of calories from an outside source.

Much of the protein lost immediately following surgery probably has its source in the liver (3). Nor is this first catabolic phase purely one of protein breakdown. To an extent which is as yet controversial, nitrogen *rejection* also occurs; even if liberal quantities of protein hydrolysate are administered by vein, and perhaps also a liberal number of calories, the ability of the body to synthesize protein from this starting material or to prevent the loss of protein seems impaired. But it is also controversial whether it is necessarily desirable even to attempt to prevent the temporary nitrogen loss of the immediate postsurgical period.

Although the caloric intake is very low in early surgical convalescence, the energy deficit which ensues is not the sole cause of the marked nitrogen loss after surgery. Nor does the nitrogen restriction which so abruptly occurs in the immediate postoperative period account for the marked degree of nitrogen deficit. The latter appears to be due to a combination of adrenal cortical overactivity, nitrogen restriction, caloric restriction, plus immobilization and other as yet poorly understood phenomena.

The catabolic phase lasts for approximately three to seven days, and it is generally followed by a longer anabolic period in which nitrogen stores are replenished, weight either is gained or weight loss is interrupted, and wound healing takes place.

VIRTUES OF PARENTERAL GLUCOSE

On the basis of present information, alimentation, and particularly excessive alimentation, with amino acids, whether by mouth or by vein does not appear to be indicated in the immediate postoperative period. During this phase, amino acids given intravenously will be largely lost. Whether this state of affairs can be reversed by the early administration of an abundance of calories, or even if it is desirable to attempt to reverse it, is not yet established.

Although administration of amino acids does not seem to minimize protein deficit in the early postoperative period, the administration of a small amount of glucose seems to be an entirely rational procedure despite the small caloric contribution from this source (4). Stores of liver glycogen can supply carbohydrate for a few hours. After this time, if dietary carbohydrate is not made available, excessive amounts of protein must be broken down and converted to sugar. It has been estimated that about 100 gm. glucose will supply the body's daily requirements for carbohydrate as such.

CALORIC NEED

The 400 calories provided by 100 gm. glucose obviously will not begin to meet the adult patient's energy requirements which will vary anywhere from 1500 to as much as 4000 or 5000 calories per day. It has been casually assumed by some that stores of body fat will readily supply the missing calories and that for a period of weeks a surgical patient can do quite nicely with just a small amount of parenterally administered glucose. Our studies with Dr. Moore on patients and volunteers have failed to confirm this assumption. Usually an abundance of calories is needed to ensure the best possible convalescence after the immediate postsurgical period, and this includes minimizing the weight loss which usually results from a surgical stay in the hospital, assuming of course that the patient is under his ideal weight.

This brings us to the central problem in the parenteral nutrition of many surgical patients, namely, the administration to the patient of an adequate supply of calories. Confronted as one so often is by patients who cannot or will not eat, or who are unable to digest or absorb calorigenic nutrients, how can the energy which cannot be administered to them via the gastrointestinal tract be provided by vein?

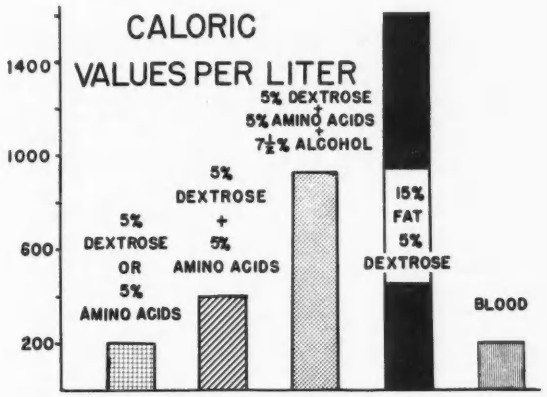

FIG. 1. *Comparison of caloric values per liter of various intravenous solutions.*

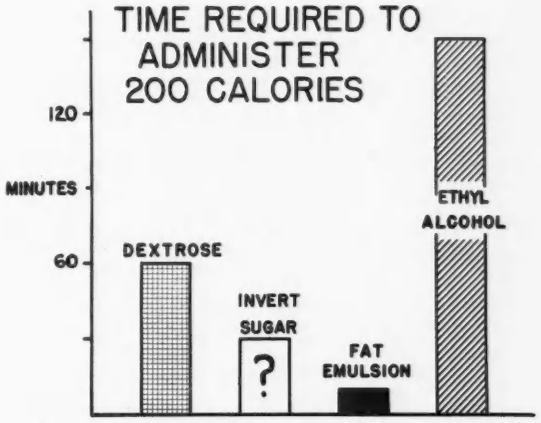

FIG. 2. *Relative infusion times needed to supply 200 calories with four types of intravenous solutions.*

INTRAVENOUS SOLUTIONS

A comparison of the caloric content per liter of certain intravenous solutions in current use is shown in Figure 1.

The concentration of glucose solutions, and of solutions containing mixtures of glucose and fructose, is limited primarily by: (a) renal threshold to the sugar, (b) vein-damaging properties of hypertonic sugar solutions, and (c) limitations on the total volume of fluids which it is possible to add to the circulation.

In Figure 2 are shown the relative infusion times needed to supply 200 calories when various nutrients are used. This is an important consideration. It is now claimed that invert sugar solutions can be given at a rate of 1.5 gm. per kilogram body weight per hour without appreciable loss of the sugar in the urine (5). If true, this would be about twice the tolerance rate of glucose. Our own experiments with invert sugar have not confirmed this. In terms of the patient's over-all caloric requirements, the few extra calories that might be gained in a given time from invert sugar or fructose seem insignificant, particularly in view of the relative expense of these sugar solutions compared to glucose.

Ethyl alcohol has also been proposed as a source of intravenous calories. While it is true that alcohol provides 5 to 6 calories per milliliter as compared with 4 calories per gram for sugar and 9 for fat, the rate at which the body can metabolize alcohol is strictly limited and probably does not exceed 15 ml. per hour regardless of the blood level. This provides only 90 calories in an hour and compares unfavorably with glucose. Moreover, the administration of alcohol at a rate exceeding its removal from the blood stream inevitably results in pharmacologic effects which may be disadvantageous. Therefore, alcohol infusions, while they theoretically provide more calories per unit volume, are necessarily time-consuming.

ADVANTAGES OF FAT SUPPLEMENTS

None of the solutions mentioned can compete with intravenous fat from the caloric standpoint (6). Fat as a nutrient is calorically rich. Concentrated emulsions of fat do not damage veins. Fat given intravenously is not excreted via the kidney. As most of you know, at the Department of Nutrition of Harvard University School of Public Health, we have been working with fat emulsions for about ten years. Most of these emulsions have contained 15 per cent fat and 4 per cent glucose and have a caloric value of 1600 calories per liter. We have, however, made satisfactory emulsions containing 30 per cent fat; such preparations provide 3200 calories per liter. In the last few years we have, with the help of cooperating physicians, given fat to several hundred patients; and in many instances marked clinical benefit has resulted.

Metabolic studies are in progress. The data indicate that the fat is safe to give and that, under appropriate conditions, it has a protein-sparing effect. In Tables 1 and 2 data are given showing typical caloric intakes provided by intravenous fat.

In the last few years we have also been interested in fat emulsions for *oral* nutrition. Certainly most patients can consume some food by mouth, but, if anorexia is present, the caloric intake may be very limited. Fat emulsions for oral use are far simpler from a technical viewpoint, and there are no pyrogens with which to contend. The emulsion we have developed for oral use contains 40 per cent fat and 10 per cent glucose and provides 1000 calories in 8 oz. Its use is illustrated in Table 3.

POSTSURGICAL VITAMIN THERAPY

Parenterally adminstered vitamins may be mentioned in order to say that they do no harm and, indeed, may do considerable good. Vitamin therapy is necessarily of the shotgun variety, but I don't think we need to apologize for using it. Some argue

TABLE 1

Data on typical patients receiving intravenous fat

DIAGNOSIS	NUMBER OF INFUSIONS	CALORIES PER INFUSION
Carcinoma of the esophagus	17	1600
Carcinoma of the pancreas	21	2000
Peritonitis	33	500–2800
Ulcer colitis	10	1200
Gastric ulcer	5	1600
Anorexia nervosa	6	1600
Nephritis	15	1600
Arthritis	8	1600

TABLE 2

Caloric distribution in a patient requiring complete parenteral nutrition, for whom the use of intravenous fat made possible a large caloric intake

DAY	CALORIC CONTRIBUTION				TOTAL CALORIES
	Carbohydrate	Protein	Alcohol	Fat	
8	600	152	224	1350	2326
9	1000			1800	2800
10	1200	152	224	1800	3376
11	940	152	448	1800	3340
12	1200			2812	4012
13	880	76		2250	3206
14	640				640

that extra vitamins can have no function if there is no deficiency. The well-known biochemical fact should be stressed that most vitamins are active only when combined as coenzymes. Therefore, a coenzyme deficiency may exist even in the presence of an abundance of free vitamins. The reactions resulting in coenzyme breakdown can be made to run in the direction of coenzyme synthesis if large concentrations of free vitamins are used; presumably this occurs by mass action. Suffice it to say, there is good biochemical reasoning, and some experimental evidence, behind administration of extra amounts of the water-soluble vitamins in surgical care, even though thousands of patients have shown what is considered good recovery without them (7).

TABLE 3

Records of typical patients in whom oral fat emulsions have been useful

DIAGNOSIS	DAYS ON STUDY	AVERAGE FAT SUPPLEMENT	WEIGHT GAIN
		ml./day	*lb.*
Duodenal ulcer	24	250	8.8
Asthma	92	120	12.6
Gastric ulcer	93	250	22.2
Thyrotoxicosis	20	200	6.6
Tuberculosis	54	250	16.5
Pancreatitis	42	250	10.9
Myasthenia	60	120	10 0
Neurasthenia	21	120	16.0

In conclusion we may state:

Fat emulsions by vein or by mouth offer opportunities to overcome caloric deficit, a condition prevalent in surgical care, and one with which it is frequently difficult to deal.

Parenteral nutrition, even at its best, is a poor substitute for good food by mouth.

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Paper May Aid Hospitals in Civil Defense

Paper cups may be, in substance, hospitals' answer to many feeding problems in the event of atomic attack or of chemical and bacteriologic warfare. The Paper Cup and Container Institute's Field Research Division recently conducted a survey of thirty-seven hospitals to determine the usefulness of paper containers in hospital operation. Hospital personnel interviewed proved nearly unanimous in commending the utility of paper equipment, particularly during a war emergency, when china, glassware, and reliable dishwashers are at a premium.

Twenty-two of the hospitals questioned reported using paper items in more ways today than during World War II. Portion cups are being used in 26 of these hospitals; 19 used cold drinking cups, 18, hot drinking cups, and 16, water cups. Fifteen employ paper containers for hot and cold food and for medicine cups, while 4 serve cream in paper. Five do some cooking in paper items. Paper containers are used in hospital ships, blood banks, and outpatient clinics, and are stocked beside drinking fountains and vending machines.

Effect of Aging and Various Types of Breakfasts on the Blood Sugar Level[1]

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DURING the past year, data have been collected relative to the effect of dietary stresses on the physiologic reactions of the aged. An opportunity presented itself to study the blood sugar responses resulting from various types of breakfasts.

Elderly people are generally conceived to show a decreased tolerance to carbohydrates. Smith (1) has reviewed the question of glucose tolerance in the aged. Hale-White and Payne (2) performed glucose tolerance tests on elderly people and found that the peak of the curve was higher and the decline slower than normal. Hofstatter, Sonnenberg, and Kountz (3) also found that with increasing age there is a decreased carbohydrate tolerance, but it is pointed out that the decrease is gradual. Marshall (4) carried out dextrose tolerance tests on a group of elderly people and found that there was some impairment in tolerance but this occurred oftener in the presence of disease.

Punschel (5) found that the average fasting blood sugar level of elderly people was within normal limits. Deren (6) confirmed this finding but observed that when dextrose tolerance tests were made, there was a decrease in tolerance. Horvath, Wisotsky, and Corwin (7) performed a series of oral glucose tolerance tests on twenty-four male patients in a state mental hospital whose ages ranged from sixty to sixty-seven years. All were ambulatory during the entire experiment, and the tests were carried out at irregular intervals. The subjects ate the regular hospital diet, which presumably was not appreciably different in nutritional content from week to week. It was found that there was a noticeable lack of consistency in the curves obtained on repeated oral glucose tolerance tests. It was concluded that the carbohydrate metabolism of men between the ages of sixty and sixty-seven years was not significantly impaired. A trend toward a slight diminution in tolerance was indicated, but the authors question this interpretation in view of the variability of repeated tests.

Decreased glucose tolerance in elderly people has been attributed to various mechanisms. One theory proposes that the capacity of the islet cells of Langerhans to produce insulin is decreased. Shock (8) disputes this, using as his argument that there is a definite decline in the incidence of diabetes after the age of sixty years. Other evidence which seems to contradict the idea of poor pancreatic response is presented by Soskin and Allweiss (9) as a result of experiments on depancreatized dogs. A constant glucose infusion was given with just enough insulin to maintain a constant blood sugar level. When glucose tolerance tests were performed, a normal type of curve was obtained without increasing the rate of infusion of insulin, thus indicating that it is not necessary to stimulate the pancreas with increased insulin secretion to obtain a normal response. Smith and Shock (10) tested glucose tolerance of various age groups using intravenous instead of oral administration. Although it was observed that there was no significant correlation between fasting blood sugar levels and age, there was a decreased tolerance in the older subjects. Blotner (11) found that age did not appear to have a definite relation to diminished sugar tolerance. It was observed that sugar tolerance decreased in patients who had been confined to bed for long periods. It was suggested that since elderly people, as a rule, are more or less inactive, this might contribute to a lower tolerance.

The effect of the amount of protein in a meal on the blood sugar level was investigated by Conway (12) using fourteen women as subjects. Two breakfasts were used in the study, one containing 67 gm. carbohydrate and 5 gm. protein, and the other 34 gm. carbohydrate and 25 gm. protein. A comparison of the blood sugar levels following the breakfasts showed that the high-carbohydrate, low-protein meal

[1] This work was generously supported by a research grant from the Cereal Institute, Inc., Chicago. Received for publication September 24, 1951.

TABLE 1

Composition of diets used in this study

FOOD	WEIGHT	PROTEIN	FAT	CARBOHYDRATE	CALORIES
Breakfast 1—Low-Protein, Cereal, and Milk					
	gm.	*gm.*	*gm.*	*gm.*	
Fruit and/or fruit juice	300	0.8	0.3	37.4	156
Cereal (dry weight)	30	3.5	0.6	21.9	107
Cream	120	3.2	24.0	4.8	248
Sugar	40	—	—	40.0	160
Toast	25	2.1	0.5	13.1	65
Butter	4	—	3.2	—	29
Jelly	20	—	—	13.0	52
Total		9.6	28.6	130.2	817
Breakfast 2—High-Protein, Cereal, and Milk					
Fruit and/or fruit juice	100	0.4	0.1	13.2	56
Cereal (dry weight)	30	3.5	0.6	21.9	107
Sugar	4	—	—	4.0	16
Toast	75	6.3	1.5	39.3	195
Butter	8	—	6.4	—	58
Cornmeal, fried (dry weight)	30	2.5	6.3	23.4	160
Whole milk	240	8.4	9.4	11.8	165
Skim milk	90	3.3	—	4.5	33
Sirup	15	—	—	11.1	45
Total		24.4	24.3	129.2	835
Breakfast 3—Low-Protein, Milk, and Egg					
Fruit or fruit juice	100 150	0.6	0.2	19.0	80
Cereal (dry weight)	15	1.5	0.3	11.3	54
Cream	120	3.2	24.0	4.8	248
Sugar	30	—	—	30.0	120
Egg	15	1.9	1.7	0.1	24
Toast	15	1.2	0.3	7.8	39
Butter	12	—	9.6	—	87
Whole milk	30	1.0	1.2	1.5	21
Jelly	10	—	—	6.5	26
Total		9.4	37.3	81.0	699
Breakfast 4—High-Protein, Milk, and Egg					
Fruit or fruit juice	100 150	0.7	0.2	18.5	79
Cereal (dry weight)	25	2.8	0.6	19.0	93
Cream	60	1.6	12.0	2.4	124
Sugar	10	—	—	10.0	40
Egg	50	6.4	5.8	0.4	79
Toast	25	2.1	0.5	13.1	65
Butter	8	—	6.4	—	58
Whole milk	330	11.4	13.0	16.3	228
Total		25.0	38.5	79.7	766

TABLE 1—*Continued*

FOOD	WEIGHT	PROTEIN	FAT	CARBOHYDRATE	CALORIES
Breakfast 5 (Basic)— Milk, Egg, and Bacon					
Fruit	98	0.5	0.1	20.2	86
Egg (soft)	50	6.4	5.8	0.4	79
Bacon (broiled)	30	4.2	8.0	0.6	93
Toast	60	5.2	1.2	31.6	158
Grape jelly	20	—	—	15.0	61
Butter	15	0.1	12.0	—	109
Whole milk	240	8.4	9.4	11.8	165
Total		24.8	36.5	79.6	751

resulted in a hypoglycemic lag between the second and third hours, accompanied by a sensation of hunger. It was also found that there was a more constant blood sugar level following the breakfast containing the larger amount of protein. More recently, Orent-Keiles and Hallman (13) studied the effects of varying amounts of protein in breakfast on the blood sugar level. It was found that if the breakfast contained less than 22 gm. protein, the blood sugar reached the fasting level in 3 hr. However, if the breakfast contained 22 gm. or more of protein, the blood sugar was found to be significantly higher than the fasting level at the end of 3 hr.

To determine if the blood sugar responses of the aged followed the same pattern as that generally conceived as applying to younger individuals, the experiment herein reported was conducted.

THE SUBJECTS

Two groups of subjects were used. One group ranged in age from twenty to thirty years and the other, sixty to eighty-four years. Although it was recognized that some of the older subjects were suffering from defects that come with advancing years, a thorough physical examination showed that their infirmities were not of sufficient severity to interfere with the requirements of the experiment.

An interesting feature of the experiment was that there was an improvement in the health of the older men during the course of the procedure. It was observed that among the older men their infirmities became less apparent. Some of them had been alone for many years and lacked facilities for modern living. The result was that they ate a poor diet, irregularly. The experiment provided them not only with an adequate diet, attractively prepared and served at regular intervals, but also with a well organized daily regimen which included many social contacts. These latter points we believe to be of considerable psychologic importance. The total diet was prescribed for all subjects, and we feel confident that it was not violated by them. The only meal which was altered for the experiment was the breakfast.

After carefully selecting the subjects, the design

TABLE 2

Effect of the vegetable protein content of the meal on the blood sugar level of men 60 to 84 years of age

MEAN FASTING LEVEL	MEAN DIFFERENCE FROM FASTING LEVEL						
	30 min. after breakfast	60 min. after breakfast	90 min. after breakfast	120 min. after breakfast	150 min. after breakfast	180 min. after breakfast	210 min. after breakfast
Breakfast 1—Low-Protein, Cereal, and Milk							
110 mg./100 ml.	57	30	12	3	−2	−5	−5
Standard deviation (mg./100 ml.)	15	10	14	14	9	7	3
t value	10.56	8.22	2.48	0.60	0.67	1.94	5.00
Level of significance	0.1%	0.1%	5%	60%	60%	10%	0.1%
Breakfast 2—High-Protein, Cereal, and Milk							
110 mg./100 ml.	53	35	18	1	7	1	−3
Standard deviation (mg./100 ml.)	20	17	13	11	11	6	7
t value	7.57	5.25	4.00	—	1.80	—	1.18
Level of significance	0.1%	0.1%	0.1%	—	20%	—	30%

of the experiment was explained to them. Each man was given a two-week trial period to determine his ability to cooperate and meet the demands of the experiment. During this period a well-balanced diet was served at regular intervals under the supervision of the Department of Nutrition in the University Hospital. Following the preliminary period of adjustment, all subjects were allowed a two-week period of free food selection in the University Hospital cafeteria. This procedure provided the dietitian with a guide to the likes and dislikes of the men as well as an estimate of the amount of food required by each. Body weight served as the general criterion as to the subjects' caloric requirements. Some of the older group were apparently underweight and some overweight. In these cases, the food was adjusted to meet the need, and the body weight was stabilized at a point which seemed to be best for the health of the man.

At the end of the preliminary period, the age groups were divided into two sub-groups, and two experimental breakfasts were fed, one to each subgroup. The regimen was followed for a period of two weeks. At the end of the period, blood sugar tests were made. Then the sub-groups were reversed, and the experiment was repeated. This procedure provided data whereby each subject served, not only as his own control, but also the groups could be compared.

DETERMINATION OF BLOOD SUGAR

Blood sugar determinations were made in duplicate on 0.2-ml. samples of finger tip blood, according to the method described by Gibson (14), except that copper reduction was carried out for 10 min. and adaptations were made for reading in an Evelyn colorimeter.

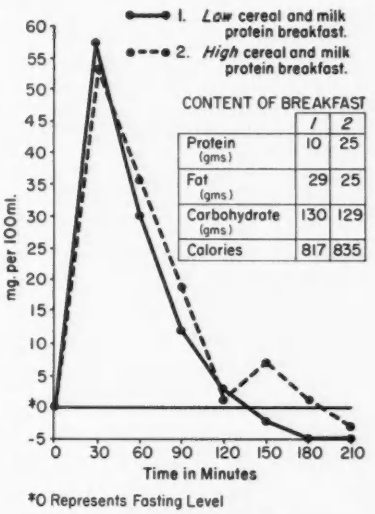
1. Low cereal and milk protein breakfast.
2. High cereal and milk protein breakfast.
CONTENT OF BREAKFAST
1 2
Protein (gms.) 10 25
Fat (gms.) 29 25
Carbohydrate (gms.) 130 129
Calories 817 835
mg. per 100ml.
60 55 50 45 40 35 30 25 20 15 10 5 *0 -5
0 30 60 90 120 150 180 210
Time in Minutes
*0 Represents Fasting Level

FIG. 1. *Mean differences from the fasting blood sugar level following Breakfasts 1 and 2.*

To determine the reliability of the technique, 100 duplicate samples were compared. The standard deviation of the difference was found to be 0.94. This means that 99 per cent of the time the difference between duplicates was not more than 2.82 mg. per 100 ml.

At the end of the preliminary experimental period, each subject came to the laboratory at 7 a.m., at which time a fasting blood sample was taken. The subject ate breakfast immediately and was back in the laboratory within 30 min. Blood samples were taken at 30-min. intervals after breakfast for a period of 3½ hr. During the testing, the men read, dozed, or watched laboratory procedures as they saw fit.

TABLE 3

Effect of the animal protein content of the meal on the blood sugar level of men 60 to 84 years of age

MEAN FASTING LEVEL	MEAN DIFFERENCE FROM FASTING LEVEL						
	30 min. after breakfast	60 min. after breakfast	90 min. after breakfast	120 min. after breakfast	150 min. after breakfast	180 min. after breakfast	210 min. after breakfast
Breakfast 3—Low-Protein, Milk, and Egg							
115 mg./100 ml.	55	22	4	1	4	−5	−9
Standard deviation (mg./100 ml.)	20	19	15	13	15	8	9
t value	7.75	3.22	0.77	—	0.76	1.85	2.00
Level of significance	0.1%	2%	50%	—	50%	20%	5%
Breakfast 4—High-Protein, Milk, and Egg							
113 mg./100 ml.	53	25	9	4	6	5	2
Standard deviation (mg./100 ml.)	15	26	16	14	16	18	14
t value	9.96	2.69	1.63	0.83	1.09	0.79	0.40
Level of significance	0.1%	5%	20%	50%	40%	50%	80%

THE BREAKFASTS

The design of the experiment required five different breakfasts. They were as follows:

1. Low[2]-protein, cereal, and milk.
2. High[2]-protein, cereal, and milk.
3. Low-protein, milk, and egg.
4. High-protein, milk, and egg.
5. Basic—milk, egg, and bacon.

The content of these breakfasts and their caloric values are given in Table 1. Breakfasts 1 and 2 were designed to show the influence which protein, chiefly of plant origin, had on the blood sugar level following the meals. These breakfasts contained approximately twice as much plant as animal protein. Breakfasts 3 and 4 were planned to show the effect which protein, chiefly of animal origin, had on the blood sugar level following the meals. In this group, the low-protein breakfast contained approximately twice as much animal as plant protein, and the high-protein breakfast had nearly four times as much animal as plant protein.

Breakfast 5 is comparable in content and calories to Breakfast 4. These breakfasts were paired to provide data for studying and comparing the sugar tolerance of the young and the aged group. The older group ate Breakfast 4 and the younger group Breakfast 5.

The breakfasts thus designed provide data for studying the following:

(a) The influence of the amount of protein in the breakfast on the blood sugar level.

[2] The terms "high" and "low" which are used to describe the amount of protein in the meals are relative and are not to be construed as meaning that the amount is extremely high or extremely low.

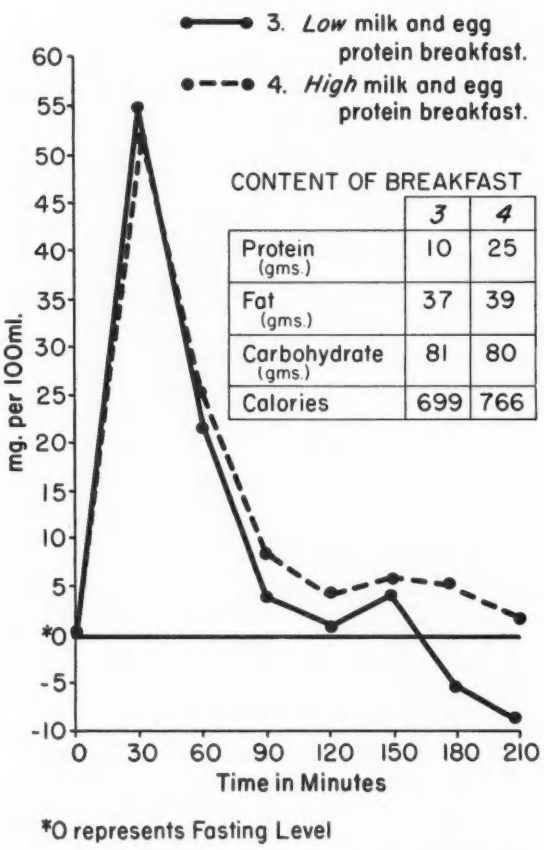

FIG. 2. *Mean differences from the fasting blood sugar level following Breakfasts 3 and 4.*

(b) The comparative effects of animal and plant protein on the blood sugar level.

(c) The effect of aging on sugar tolerance.

RESULTS

Influence of Protein Intake on Blood Sugar Level

The results of this part of the experiment are based on data collected from the sixty-to-eighty-four age group. A summary of the data involving low- and high-plant-protein breakfasts is presented in Table 2 and in Figure 1. Thirty min. after the breakfasts, there was a significant rise in blood sugar which was maintained for 90 min., regardless of the fact that one breakfast contained 25 gm. protein and the other only 10 gm. At the 120-min. determination, it was found that the blood sugar level was not significantly different from the fasting level in either case. This situation continued for 180 min. Although at 180 min. the blood sugar level following the low-protein breakfast was well below the fasting level, the difference was significant at only the 10 per cent[3] level of confidence. At 210 min. after the low-protein breakfast, the blood sugar level was significantly below the fasting value. In the case of the high-protein breakfast, the blood sugar returned to the fasting level in 120 min. and remained there throughout the rest of the testing.

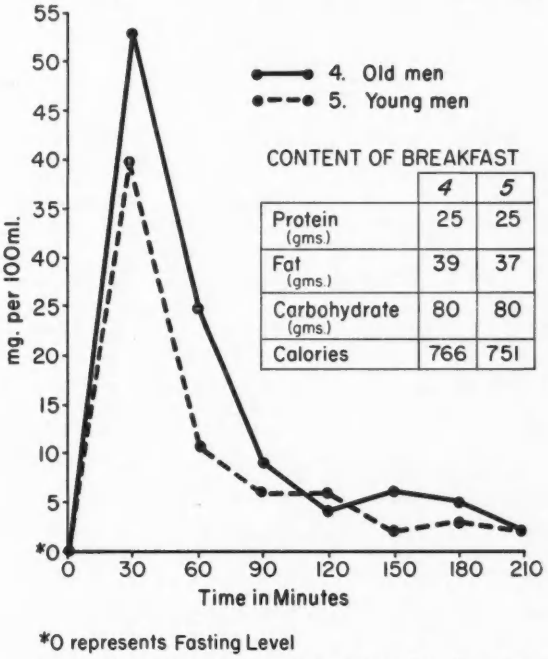

FIG. 3. *Comparison of blood sugar change from the fasting level in old and young men following similar breakfasts.*

A summary of the data collected following the high- and low-animal-protein breakfasts is shown in Table 3 and presented graphically in Figure 2. The data follow a pattern similar to that seen in Table 2. There was a significant initial rise at 30 and 60 min. following both breakfasts. However, the blood sugar was not significantly different from the fasting level at 90 min. in either case. This situation continued for both breakfasts for 180 min. At the 210-min. interval, the blood sugar following the low-protein breakfast was significantly below the fasting level. Following the high-protein meal, the blood sugar continued at the fasting level at this time.

It is concluded from this part of the experiment that the amount of protein in breakfast influences the blood sugar level. Ten-gm. protein are not sufficient to hold the blood sugar at the fasting level for $3\frac{1}{2}$ hr. following the meal. However, 25 gm. are adequate in this respect.

[3] Since in this experiment 5 per cent is the level at which the null hypothesis is rejected, this value cannot be considered significant.

TABLE 4

Effect of age on sugar tolerance

MEAN FASTING LEVEL	MEAN DIFFERENCE FROM FASTING LEVEL						
	30 min. after breakfast	60 min. after breakfast	90 min. after breakfast	120 min. after breakfast	150 min. after breakfast	180 min. after breakfast	210 min. after breakfast
Breakfast 4—Men 60 to 84 Years of Age							
113 mg./100 ml.	53	25	9	4	6	5	2
Standard deviation (mg./100 ml.)	15	26	16	14	16	18	14
t value	9.96	2.69	1.63	0.83	1.09	0.79	0.40
Level of significance	0.1%	5%	20%	50%	40%	50%	80%
Breakfast 5—Men 20 to 30 Years of Age							
86 (mg./100 ml.)	40	11	6	6	2	3	2
Standard deviation (mg./100 ml.)	16	15	16	11	6	6	10
t value	8.10	2.22	1.22	1.68	1.15	1.77	0.45
Level of significance	0.1%	5%	26%	14%	28%	12%	70%

Effect of Origin of Protein on Blood Sugar Level

The data presented in this part of the experiment also are from the older age group. To give information on the effect of the kind of protein in breakfast on the blood sugar level, advantage is taken of the data presented in Tables 2 and 3. The blood sugar level after the breakfast containing protein derived chiefly from cereals and milk behaved almost exactly as it did following a breakfast in which the protein was derived from milk and eggs. It is concluded that, although the amount of protein in breakfast influences the blood sugar level, the source of the protein makes no difference.

Effect of Aging on Sugar Tolerance

Data were collected relative to the blood sugar level following a basic[4] breakfast (Table 1, Breakfast 5) for the subjects ranging in age from twenty to thirty years. To compare the blood sugar responses of the older men with those of the younger group, similar data were collected from the older group following a similar breakfast (Table 1, Breakfast 4). Tests for both groups of subjects were continued for 3½ hr. after breakfast.

The data are shown in Table 4 and presented graphically in Figure 3. Statistically, the blood sugar responses of both groups following similar breakfasts are exactly the same. During the first hour after breakfast, there was a sharp increase in blood sugar. Beginning with the 90-min. period and continuing throughout the remainder of the testing period, the values were not significantly different from the fasting level. It is thus concluded that both the younger and older group experienced the same blood sugar changes following similar breakfasts.

CONCLUSIONS

On the basis of data collected from a group of men ranging in age from twenty to thirty years and another group of men ranging in age from sixty to eighty-four years, relative to their blood sugar response following different types of breakfasts, the following conclusions are drawn:

(a) The blood sugar level following breakfast is significantly affected by the amount of protein in the meal. In this experiment 10 gm. were not sufficient to maintain the level 3½ hr. after the breakfast at, or above, the fasting level. Twenty-five gm. protein were found to be adequate in this respect.

(b) The effects of the protein in the breakfast on the blood sugar level following the meal were the same regardless of whether it was of plant or animal origin.

(c) Both the younger and the aged group experienced the same blood sugar changes following similar breakfasts.

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[4] A basic breakfast is regarded as one which meets one-fourth to one-third the daily requirements with respect to essential foodstuffs and calories.

Selective Menus for Good-Will

"I become more firmly convinced day by day," stated Harold Prather, Administrator, East Tennessee Baptist Hospital, in his address at the A.D.A. 34th Annual Meeting in Cleveland, "that a selective menu for general diets is one of the best public relations a hospital can have, and this is not an expensive procedure but an economical one.

"In checking questionnaires sent to former patients and making personal visits to patients, I find that they all take a keen interest in the food. In fact, to some of them, the serving of a meal is the only pleasure of the hospital day. If the food service is poor, the day is a disappointment. If it is properly cooked and attractively served, it plays a large part in creating a favorable attitude toward the hospital. Many patients may not possess the knowledge to evaluate their medical and nursing care, but they certainly are capable of knowing when they are pleased with the food."

Amino Acid Content of Processed Meats[1]

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IN PREVIOUS studies from this laboratory, the amounts of eighteen amino acids in fresh and cooked pork, lamb, and beef cuts have been determined (1–3). Since considerable amounts of meat products are prepared as processed meats (4), it was of interest to extend these studies and determine the amino acid content of processed meats (sausage items, canned meat products, cured meats, and so on). The samples have also been analyzed for thiamine, riboflavin, and niacin (5).

EXPERIMENTAL PROCEDURE

The description, preparation, and proximate analyses of the samples have already been presented (5). The amino acids were hydrolyzed by autoclaving 2-gm. samples with 25 ml. 3 N hydrochloric acid for 15 hr. and analyzed by microbiologic methods reported earlier (1, 2). Tryptophan was determined by the Bates chemical method as outlined by Graham *et al.* (6). In most instances comparative tests were made with more than one test organism, and the agreement in the amino acid values obtained was in accord with those observed for similar tests with purified proteins and with fresh and cooked pork, beef, and lamb cuts.

RESULTS AND DISCUSSION

The results obtained for leucine, valine, isoleucine, threonine, phenylalanine, arginine, histidine, lysine, tryptophan, and methionine are presented in Table 1 and for glutamic acid, aspartic acid, proline, glycine, tyrosine, serine, and cystine in Table 2. Semiquantitative data were obtained for alanine, and the percentage of alanine in the crude protein was found to be 6.4 per cent.

The amino acid composition of the crude protein of the processed meats was found to be quite uniform. Certain samples, however, were low in one or more of the essential amino acids. Veal loaf, diced veal, and diced beef liver were low in arginine; braunschweiger, head cheese, and beef liver were low in lysine, and head cheese and potted meat in histidine and isoleucine. Head cheese and bacon were low in methionine, and head cheese was also low in threonine, valine, leucine, and tryptophan. From an overall evaluation of these data, it may be concluded that the processed meats, except for head cheese and the potted meat product, are excellent sources of the essential amino acids. It is also of interest that the glutamic acid content (Table 2) of head cheese, potted meat, and diced beef liver was also lower on a protein basis than for the other products studied. The amounts of proline and glycine, however, were considerably higher in head cheese and the potted meat products indicating the presence of increased amounts of gelatin and/or collagen-like proteins in these samples as compared to the other products. The analytical data are in accord with a compilation of data on the amino acid composition of collagens and gelatins as compared to data on muscle (7).

It should be pointed out that the percentage of the amino acids in the crude protein of beef liver was somewhat lower than for other samples, in part at least because of the larger quantity of the total nitrogen present in liver in the form of non-amino-acid nitrogen. Separate calculations showed that only 75.3 per cent of the total nitrogen in beef liver was accounted for by the eighteen amino acids determined as compared to 85.7 per cent for the average of all of the processed meat samples.

The percentage of the total nitrogen contributed by the eighteen amino acids in the processed meats has been calculated and compared with the percentage obtained for these eighteen amino acids in

[1] Journal Paper No. 42, American Meat Institute Foundation. Received for publication August 3, 1951.

TABLE 1

*Essential amino acid composition of processed meats**

SAMPLE	PROTEIN	LEUCINE	VALINE	ISOLEUCINE	THREONINE	PHENYLALANINE	ARGININE	HISTIDINE	LYSINE	TRYPTOPHAN	METHIONINE
	gm./100 gm.	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*
Sausage Items											
Thuringer	17.72	1.16	0.89	0.85	0.76	0.64	1.10	0.52	1.53	0.17	0.39
Cooked salami	17.10	1.14	0.82	0.83	0.64	0.59	1.05	0.44	1.36	0.14	0.37
Kolbase (Polish)	13.51	0.89	0.65	0.65	0.44	0.51	0.96	0.32	1.03	0.14	0.28
Bologna, large	12.95	0.97	0.76	0.71	0.62	0.51	0.98	0.38	1.00	0.13	0.31
Sausage, country style	14.98	0.99	0.75	0.71	0.55	0.53	1.01	0.34	1.11	0.13	0.34
Sausage, smoked links	15.35	1.12	0.81	0.77	0.63	0.56	1.05	0.43	1.09	0.14	0.35
Dutch loaf	14.99	1.17	0.79	0.75	0.66	0.55	1.09	0.45	1.16	0.14	0.35
Head cheese	15.07	0.95	0.62	0.51	0.42	0.57	1.08	0.28	0.91	0.08	0.25
Braunschweiger	12.53	1.06	0.78	0.61	0.45	0.60	0.94	0.31	0.75	0.16	0.26
Canned Products											
Veal loaf	17.22	1.24	0.96	0.86	0.63	0.62	0.92	0.39	1.26	0.20	0.42
Luncheon meat	12.18	0.96	0.56	0.62	0.43	0.54	0.90	0.39	0.92	0.12	0.22
Ham	16.77	1.29	0.94	0.89	0.69	0.60	0.92	0.56	1.12	0.19	0.40
Pork, chopped	13.77	1.04	0.76	0.72	0.53	0.57	1.02	0.45	1.13	0.18	0.31
Pork, chopped	14.63	1.17	0.80	0.74	0.57	0.58	0.91	0.44	1.22	0.17	0.36
Pork and beef	14.29	1.19	0.81	0.73	0.62	0.58	1.05	0.46	1.14	0.15	0.31
Vienna sausage	12.39	0.96	0.69	0.67	0.43	0.51	0.85	0.33	0.95	0.13	0.32
Potted meat	16.08	1.20	0.94	0.64	0.66	0.64	1.00	0.32	1.06	0.15	0.36
Beef, chopped	17.05	1.44	0.91	0.81	0.71	0.64	1.06	0.57	1.38	0.18	0.35
Beef, diced	20.78	1.60	1.14	1.18	0.89	0.85	1.39	0.77	1.58	0.23	0.55
Veal, diced	21.00	1.38	1.14	1.13	0.88	0.83	1.10	0.76	1.56	0.22	0.51
Pork, diced	20.96	1.46	1.19	1.11	0.91	0.87	1.24	0.83	1.61	0.24	0.51
Beef liver, diced	21.76	1.64	1.12	1.04	0.91	1.02	1.15	0.52	1.20	0.31	0.45
Lamb, strained	16.89	1.17	0.78	0.90	0.67	0.62	1.01	0.38	1.11	0.18	0.38
Miscellaneous											
Ham, boiled	14.26	1.12	0.80	0.77	0.61	0.57	0.86	0.40	1.25	0.14	0.35
Beef tongue, smoked	17.21	1.09	0.78	0.71	0.55	0.56	1.26	0.42	1.22	0.18	0.34
Bacon	7.76	0.62	0.37	0.34	0.26	0.37	0.53	0.21	0.50	0.08	0.12

* The values are expressed as the percentage in the undried meat. To calculate the percentage of each amino acid in the crude protein, multiply the value observed for the amino acid times 100 and divide by the percentage of protein in the sample —i.e., per cent leucine in the crude protein of thuringer = $1.16 \times \frac{100}{17.72} = 6.57$.

pork, beef, and lamb cuts determined by similar methods. The amounts of each amino acid in the crude protein of fresh and cooked pork (twelve samples), fresh and cooked lamb (twelve samples), fresh and cooked beef (twenty-four samples), and the processed meats (twenty-six samples), and the percentage of the total nitrogen accounted for are presented in Table 3. The percentage of the total nitrogen accounted for was similar for pork, beef, lamb, and the processed samples (average of 86.1 per cent). The amount of nitrogen contributed by hydroxyproline, purines and pyrimidines, vitamins, amides, creatine, and so on has not been determined. Other studies (8) have shown that up to 10 per cent of the total nitrogen in beef muscle is non-amino-acid nitrogen. These findings would indicate that approximately 95 per cent of the total nitrogen can be accounted for on the basis of the nitrogen contributed by the specific constituents in meat that have been determined.

SUMMARY

The amounts of eighteen amino acids in certain processed meats (sausage items, canned meats, cured meats, and so on) were determined. In general, these products were similar in amino acid composition to fresh and cooked beef, pork, and lamb samples. Head cheese and potted meat were low in several of the essential amino acids. A summary of the amounts of eighteen amino acids in fresh and cooked beef, pork, and lamb and in the processed meats has been presented. The percentage of the total nitrogen accounted for by the eighteen amino acids averaged 86.1 for all the samples studied.

TABLE 2

*Additional amino acids in processed meats**

SAMPLE	GLUTAMIC ACID	ASPARTIC ACID	PROLINE	GLYCINE	TYROSINE	SERINE	CYSTINE
	gm./100 gm.	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*	*gm./100 gm.*
Sausage Items							
Thuringer	2.44	1.59	0.95	1.22	0.60	0.75	0.22
Cooked salami	2.37	1.58	1.02	1.46	0.68	0.66	0.24
Kolbase (Polish)	1.65	1.24	0.70	1.06	0.50	0.54	0.23
Sausage, country style	2.02	1.36	0.99	1.43	0.52	0.59	0.23
Sausage, smoked links	2.12	1.43	0.86	1.36	0.58	0.64	0.18
Dutch loaf	2.39	1.56	0.80	1.07	0.57	0.65	0.19
Head cheese	1.59	1.34	1.22	1.81	0.44	0.59	0.21
Braunschweiger	1.43	1.21	0.79	1.12	0.57	0.61	0.25
Canned Meats							
Veal loaf	2.04	1.40	1.02	1.48	0.47	0.66	0.21
Luncheon meat	1.62	1.16	0.62	1.02	0.45	0.50	0.21
Ham	2.20	1.52	0.81	1.04	0.67	0.73	0.27
Pork, chopped	1.83	1.33	0.69	1.05	0.54	0.56	0.23
Pork, chopped	2.05	1.45	0.74	1.04	0.54	0.63	0.22
Pork and beef	2.01	1.49	0.83	1.12	0.57	0.60	0.26
Vienna sausage	1.57	1.21	0.73	1.22	0.41	0.52	0.21
Potted meat	1.74	1.32	1.15	1.69	0.49	0.69	0.25
Beef, chopped	2.10	1.52	0.99	1.40	0.59	0.74	0.31
Beef, diced	3.07	2.13	1.09	1.22	0.61	0.88	0.32
Veal, diced	2.80	1.97	1.01	1.43	0.61	0.94	0.26
Pork, diced	2.80	2.01	0.89	1.20	0.66	0.82	0.25
Beef liver, diced	2.16	1.78	0.95	1.27	0.77	1.01	0.28
Lamb, strained	2.16	1.51	0.80	1.11	0.53	0.66	0 21
Miscellaneous							
Ham, boiled	1.61	1.44	0.72	1.03	0.57	0.59	0.22
Beef tongue, smoked	2.11	1.53	0.95	1.29	0.57	0.69	0.22
Bacon	0.87	0.73	0.41	0.73	0.20	0.30	0.09

* See footnote, Table 1.

TABLE 3

Summary of the amino acid composition of pork, beef, lamb, and processed meat samples (all values expressed as the percentage in the crude protein)*

AMINO ACID	PORK†	LAMB†	BEEF‡	PROCESSED MEATS ⁂
Leucine	7.53	7.42	8.40	7.36
Valine	4.97	5.00	5.71	5.24
Isoleucine	4.89	4.78	5.07	4.94
Methionine	2.50	2.32	2.32	2.21
Threonine	5.12	4.88	4.04	3.92
Phenylalanine	4.14	3.94	4.02	3.95
Arginine	6.35	6.86	6.56	6.57
Histidine	3.23	2.68	2.94	2.83
Lysine	7.77	7.65	8.37	7.38
Tryptophan	1.35	1.32	1.10	1.04
Glutamic acid	14.51	14.35	14.35	12.90
Aspartic acid	8.92	8.46	8.75	9.10
Proline	4.60	4.80	5.40	5.23
Tyrosine	3.02	3.21	3.24	2.87

TABLE 3—*Concluded*

AMINO ACID	PORK†	LAMB†	BEEF‡	PROCESSED MEATS ⁂
Glycine	6.10	6.74	7.11	7.98
Serine	3.97	3.93	3.77	4.18
Cystine	1.31	1.34	1.35	1.47
Alanine	6.30	6.30	6.40	6.40
Per cent of total nitrogen	85.4	85.6	87.8	85.7

* To calculate the percent of each amino acid in the undried meat, multiply the value for each amino acid in the crude protein by the protein percentage and divide by 100—i.e., if fresh pork was found to contain 15.0 per cent protein, the percentage of leucine in fresh pork would be calculated as follows: $7.53 \times \frac{15.0}{100} = 1.13$

† Twelve samples.

‡ Twenty-four samples.

⁂ Twenty-six samples.

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BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

William Prout—January 15–1785–April 9, 1850

Knowledge of the chemistry of gastric digestion began with the work of Prout, who, in 1824, showed the presence of free hydrochloric acid in gastric juice. Spallanzani (1729–1799) had thought gastric juice might be acid in nature because it curdled milk, but samples of juice that he collected gave no acid reaction; they were probably contaminated with bile and mucus. Then J. R. Young (the Philadelphia physiologist) in 1803 proved that gastric juice normally contains an acid. By careful titration and distillation, Prout was able to show that this acid was hydrochloric. This work was soon confirmed by other chemists, notably Tiedemann (1781–1861) and Gmelin (1788–1853). Prout also showed that while the presence of hydrochloric acid was necessary for gastric digestion, some other agent was responsible for the actual process of dissolving food. Schwann later, in 1835, showed that this was pepsin.

Prout was born in Gloucestershire, England, on January 15, 1785. He studied medicine and received his degree from Edinburgh in 1811, presenting a thesis on intermittent fevers. The following year he settled in London to practice medicine. Early in his studies he became interested in chemistry and was a pioneer in physiologic chemistry, beginning his publications in this field in 1818 and also lecturing at his home to a small but distinguished audience.

He is best known for "Prout's Hypothesis," which he first published anonymously in 1815 under the title *Relationship between Specific Gravities of Bodies in Their Gaseous States, and Weights of Their Atoms.* His hypothesis was that atomic weights are multiples of that of hydrogen. He also studied the composition of urine, prepared urea in the laboratory, discovered uric acid in the excretion of the boa constrictor, and published several papers on the chemistry of blood. In 1821, he published a book, *Inquiry in Gravel Calculus and Other Diseases of Urinary Organs;* the third revision of this work appeared as *On Stomach and Urinary Diseases,* went through several editions, and long served as a practical treatise on the subject.

In 1829, Prout gave up his biochemical studies and devoted himself to his medical practice. He became deaf in his later years. The Royal College of Physicians and Surgeons owns a portrait of him which shows him as a man of finely chiselled features, somewhat bold with a long nose and penetrating gaze. Prout died on April 9, 1850.

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Dietary Habits of Pregnant Women of Low Income in a Rural State[1]

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ALTHOUGH several studies of nutrition in pregnancy have been reported, most of them have been concerned with the nutrition of indigent women in large urban areas. It seemed desirable to study also the dietary habits of indigent pregnant women in an area predominantly rural and one wherein literacy is high. Dietary patterns as observed in Iowa are probably common to many if not most of the rural sections of the northern states.

The 404 subjects reported here were all patients of the Obstetric Department of the University of Iowa Hospitals. All were of low-income groups, and 342 of them were admitted with indigent status. Because this large teaching hospital is situated in a small community, in order to obtain sufficient amount and variety of teaching material for obstetrics, the definition of indigent is far more lenient than is customary in large urban hospitals. Since these women come from all parts of the state, it is necessary to admit them before labor starts. Some are hospitalized for two weeks before delivery. Ample time for repeated interviews is thus available. Few of the women of this study had consulted a physician until the third trimester of pregnancy; usually he was consulted then solely for the purpose of obtaining admission to this hospital. Few of the women reported having received dietary instruction during this or any preceding pregnancy.

For the purpose of this study, the women were divided into five groups, as follows:

Group I—62 young women, wives of students in the University. They constituted a control group. They had limited income but good intelligence. Each had received dietary instruction early in pregnancy.

The remaining four groups (342 women) were of indigent status.

Group II—66 women, wives of farm laborers. These families usually had some meat and milk and were permitted by their employers to have gardens and chickens.

Group III—228 women, wives of town laborers. Division of this group into skilled and unskilled labor proved impractical because the wives of skilled laborers were hesitant to disclose facts which might jeopardize their indigent status with the hospital.

Group IV—20 women, wives of unemployed laborers.

Group V—28 unmarried women. Their environments varied. Some were from farm homes, others were waitresses. Often their diets were better than those of the women in Group IV.

All interviews were conducted by the same experienced person[3] and included detailed questioning concerning habitual diets before, as well as during pregnancy. Excellent cooperation was obtained from the women, as soon as it was made clear that the interviewer was not interested in weight gain or in financial status. The interviews included careful questioning as to between-meal eating, sizes of servings, and methods of cooking. Every effort was made to have the records complete and factual. In cases of doubt, repeated interviews were usually successful, as reassurance was given the new patient by other patients who had been interviewed previously. Quantities of individual servings were estimated conservatively, as were the amounts of each nutritional component in the serving. Agriculture Handbook No. 8 (1) and Bowes and Church (2) were used as references in calculating the diets. Dietary advice was freely given, when requested.

The present report includes the dietary studies of all women interviewed between November 1949 and January 1951. It does not include all women admitted, for the interviewer's duties also involved consultant service in the University Mobile Clinics,

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[2] The authors are indebted to the Department of Obstetrics of this University for permission to make this study.

[3] M. B. S.

which caused her absence for about forty days yearly in addition to her vacation time. No selection of cases was practiced other than that required by absence. The data were somewhat weighted toward a winter study because a smaller number of Mobile Clinics was held during stormy winter months and because the annual month's vacation came during the summer.

From the detailed dietary records of each patient, a summary record was prepared, listing the amounts of each nutrient studied which were provided by each of fifteen dietary categories. These summary sheets provided the basis for the statistical analyses.[4]

RESULTS

General Findings

It early became obvious that the majority of these women had poor dietary habits dating back to childhood. In addition, their food habits had been greatly influenced by marriage. Meals were planned according to the husband's likes and dislikes superimposed on the wife's original dietary habits. If there were children, they also altered the mother's food habits. For example, breakfast cereals were eaten by the mother to get the children to eat cereal regularly. Often the milk used with cereal constituted the total milk intake for the day for the mother. Children of school age demanded their favorite foods. In families with children, the mother habitually put her own food needs last.

The women in Group I (wives of students), with a few exceptions, followed as well as finances permitted the dietary instructions given them early in pregnancy. The prepregnancy dietary habits of these women also were better than those of the other groups. Even in this group, however, some women showed poor judgment in choice of food. Most of them regularly took some form of vitamin D; a few had mixed vitamin therapy. Almost none of the indigent women received vitamin D other than in the form of sunlight.

Certain dietary patterns were common to all four of the indigent groups. Bread and potatoes were the caloric mainstay. It was not uncommon for a woman to eat six to nine slices of bread daily, and often a "helping" of potatoes consisted of about two standard servings. Two such "helpings" a meal, or from ten to twenty servings weekly, results in a potato consumption difficult to believe by persons accustomed to count calories rather than to "fill up on something." In the dietary computations reported here, the amounts of potatoes have been calculated conservatively. Actual amounts eaten may have been considerably higher. Estimates of bread ingestion are considered accurate, as bread was usually purchased sliced. The women were questioned closely as to brands of bread, flour, and other cereal products. Almost without exception, cereal products were enriched. Bread, pastries, sweet rolls, and cakes formed the bulk of the cereal intake. Cooked cereals were eaten for breakfast if the family had children; otherwise breakfast cereals were not heavily used. Macaroni was eaten occasionally as a substitute for potato. Usually it was cooked with tomatoes. Other cereal foods were not commonly eaten.

Citrus fruits were eaten in significant amounts only by Group I. Apples and canned fruits were eaten in fair amount by all groups, with apples being the most common winter fruit. In summer, a wider variety of fruit was eaten. Tomatoes were used in relatively large quantities by almost all families. Carrots were the most popular vegetable. Green beans were next in favor, running well below carrots. Tomatoes, carrots, and green beans were regularly canned at home. Corn and peas were usually purchased canned. Sweet potatoes were not used. Cabbage was used almost entirely as cole slaw. Except with Group I, lettuce was a seasonal vegetable; leaf lettuce was used almost entirely. Vegetables other than those mentioned were seldom eaten.

The cheaper cuts of meat were used whenever meat was bought. Liver was eaten surprisingly often, probably because, in Iowa, pork liver is a relatively cheap meat. It was used by town as well as farm families. Fish was seldom reported. Legumes did not serve to any great extent as meat substitutes. Eggs were used as meat substitutes on religious fast days, otherwise largely in cooking.

Milk puddings were standard in families with children, rare otherwise. Lack of refrigeration or repugnance toward milk after washing the separator were the chief reasons given by farm women for not drinking milk. Many farm women who would not drink milk at home drank it with pleasure in the hospital. Cost was given as the chief reason for omitting milk from the menu of town families.

Many of the women had unusual dietary cravings during pregnancy. No woman whose diet was wholly adequate exhibited such a craving. Several in Group I with adequate diets, but who had difficulty in controlling weight, either chewed ice or nibbled raw carrot strips "just to be eating something when I was hungry." These were not considered as cravings. A few of the true dietary cravings resulted in real improvement of the diet; several mothers whose calcium and protein intake had always been low, craved ice cream and ate it "every chance I could get." Several women craved raw potatoes, others citrus fruits. On the other hand, one woman ate 5 bu. apples and another ate 18 lb. raw oatmeal during the course of their pregnancies. A third woman consumed a loaf and a half of sandwich bread and over 3 lb. potatoes daily, eating everything except potatoes in sandwich form. She also ate up to five

[4] The statistical analyses were computed by the Statistical Service of the University, under the direction of Dr. Leonard Brcka.

TABLE 1

Nutritional data for 404 pregnant women classified according to economic status

MEASUREMENT	GROUP I—62 students' wives	GROUP II—66 farm laborers' wives	GROUP III—228 town laborers' wives	GROUP IV—20 wives of unemployed laborers	GROUP V—28 unmarried mothers	RECOMMENDED ALLOWANCE
Caloric Intake						
Mean	2,535	2,616	2,463	2,404	2,532	
Standard deviation	458	594	517	607	496	2,400
Maximum	3,687	4,179	4,284	3,310	3,459	
Minimum	1,583	1,057	1,421	1,245	1,158	
Protein Intake (gm.)						
Mean	75.3	68.9	60.2	55.2	59.4	
Standard deviation	18.3	17.0	20.8	12.3	14.5	85.0
Maximum	133.5	130.5	102.0	77.7	81.4	
Minimum	44.7	33.4	22.3	30.8	21.8	
Calcium Intake (gm.)						
Mean	1.14	0.74	0.53	0.38	0.56	
Standard deviation	0.91	0.38	0.30	0.17	0.35	1.50
Maximum	2.70	1.77	1.67	0.70	1.77	
Minimum	0.08	0.17	0.07	0.11	0.11	
Iron Intake (mg.)						
Mean	14.0	14.0	12.8	12.8	12.5	
Standard deviation	2.6	3.4	2.6	3.0	2.7	15.0
Maximum	22.8	27.0	19.7	17.5	16.7	
Minimum	8.5	7.5	3.7	6.2	3.2	
Vitamin A Intake (I.U.)						
Mean	9,044	7,113	6,425	5,369	5,837	
Standard deviation	3,685	2,621	2,545	2,406	2,702	6,000
Maximum	16,276	18,655	15,795	13,042	10,664	
Minimum	2,845	3,050	1,575	2,083	1,310	
Thiamine Intake (mg.)						
Mean	1.76	1.74	1.58	1.48	1.54	
Standard deviation	0.38	0.46	0.41	0.35	0.45	1.50
Maximum	2.53	2.95	2.65	2.00	2.07	
Minimum	0.89	0.69	0.62	1.02	0.32	
Riboflavin Intake (mg.)						
Mean	2.18	1.82	1.46	1.29	1.54	
Standard deviation	0.76	0.62	0.52	0.50	0.60	2.50
Maximum	4.66	3.19	3.01	1.84	2.14	
Minimum	0.78	0.93	0.40	0.52	0.55	
Ascorbic Acid Intake (mg.)						
Mean	97.3	74.9	73.0	75.1	63.4	
Standard deviation	26.7	26.0	23.0	31.3	32.7	100.0
Maximum	195.0	144.0	151.0	136.0	107.0	
Minimum	60.0	21.0	33.0	28.0	21.0	

kolaches (a form of sweet roll made with dried fruits) at a meal; needless to say, she was seriously overweight, but her intake of many nutrients was very poor. Nevertheless only bread and potatoes were craved.

Specific Findings

The values for mean, maximum, and minimum intake of each nutrient studied are listed in Table 1 for the five economic groups.

Examination of the mean dietary intakes of the

five groups indicates that economic status was not the only major factor involved in choice of diet by these women. The range of intake of the various nutrients tended to overshadow differences in mean intake of the various groups. Dietary patterns for the four indigent groups (II through V) tended to be similar, differing largely in their content of higher cost foods. The diets in Group I showed evidence of greater nutritional knowledge and more careful planning.

The percentage distribution of intake among the various foodstuffs is shown in Figures 1 to 5 inclusive; these figures and Figures 6 and 7 also show the relation of total intake to the National Research Council Recommended Dietary Allowances (3) for the latter half of pregnancy.

Calories. The mean caloric intake levels were ample for all groups (Table 1 and Fig. 1). Each group, however, contained a few women with diets very low in calories for reduction of weight, because of nausea and vomiting, or in a very few instances, because of inability to get food. Only 29 of the 404 women ate less than 1800 calories daily; 2 women received less than 1200 calories. The preponderance of cereal foods is obvious from Figure 1. The percentage of calories supplied by bread alone varied from 12 per cent for Group I to 22 per cent for Group IV; for total cereal foods, these percentages were 26 and 38, respectively.

Fats, sweets, and soft drinks together supplied from 23.7 per cent of the calories for Group I to 30 per cent for Group V. Of this group of foods, the vitamin A in the enriched margarine was the major nutrient provided in addition to calories by these foods. In contrast to these predominantly caloric foods, milk, meat, and other animal proteins provided from 14 per cent of the calories for Group IV to a maximum of 34 per cent for Group I. Potatoes provided at least from 5 to 9 per cent of the total calories for the various groups. For many women, potatoes contributed a far higher proportion.

Protein. The mean protein intake of each group was below the recommended allowance, as was to be expected (Table 1, Fig. 2). The maximum intake was over 100 gm. daily in each of the first three groups; 37 of the 404 women ingested 85 gm. or more of protein daily. On the other hand, 76 women habitually ate less than 50 gm.

Cereals, including bread, provided 21 to 41 per cent of the daily protein. Animal proteins including milk made up 66 per cent of the total protein for Group I and only 39 per cent for Group IV, the lowest of the five groups. The intake of meat, fish, and eggs remained approximately a constant proportion of the total protein intake for all five groups; therefore, the absolute intake decreased sharply from Group I to Group IV, rising a little for Group V

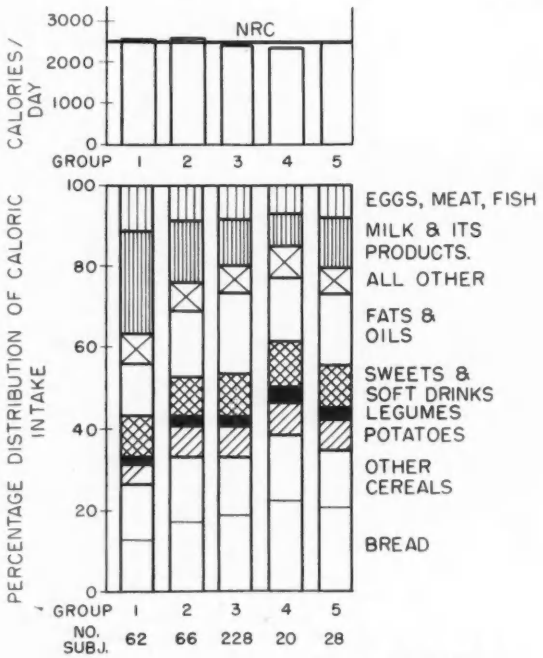

FIG. 1. *Percentage distribution of caloric intake among food groups plus comparison of intake with Recommended Dietary Allowance for pregnancy* (3).

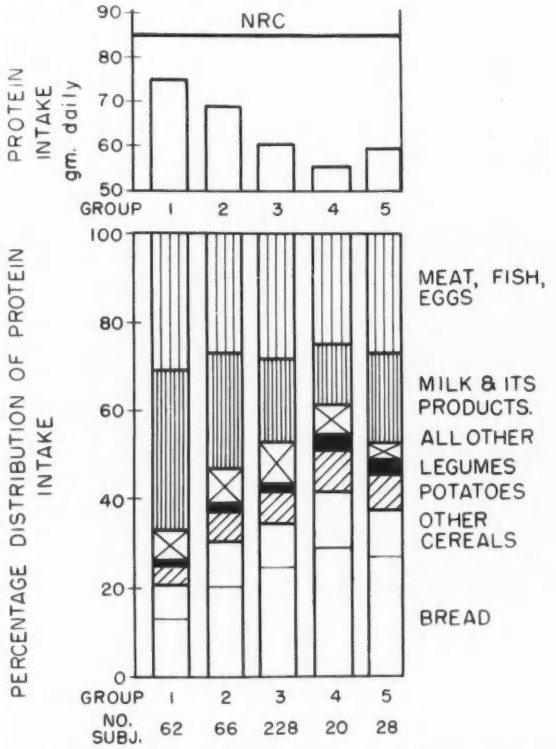

FIG. 2. *Percentage distribution of protein intake among food groups, plus comparison of intake with Recommended Dietary Allowances* (3).

Unfortunately, the milk intake decreased much more than the meat intake; thus the group receiving the lowest quantity of protein also ate the poorest quality of protein. Even a pint of milk a day added to the other foods ingested by the indigent women would have increased the mean protein intake values to 72 gm. or more and the animal protein to 50 per cent or more of the total.

Thiamine. Cereals provided the major part of the daily thiamine intake for each group (Fig. 3), and the mean intake for each group was ample (Table 1). In Iowa, practically all cereal foods and flours are enriched; therefore, the intakes of thiamine, iron, and riboflavin were all far higher than would be possible with unenriched white flour products. Bread alone supplied from 15 to 31 per cent of the thiamine; from 40 to 50 per cent was provided by cereal foods. White flour products predominated heavily in the diets; therefore, had the bread and flour been unenriched, the thiamine intake would have been cut by 30 to 40 per cent and many women would have been close to actual deficiency, if not clinically deficient. Other than cereals, potatoes provided the chief source of thiamine for the indigent group (Fig. 3), supplying from 8 to 18 per cent of a day's total. Animal proteins, including milk, provided from 17 to 29 per cent of the thiamine for Groups IV and I respectively.

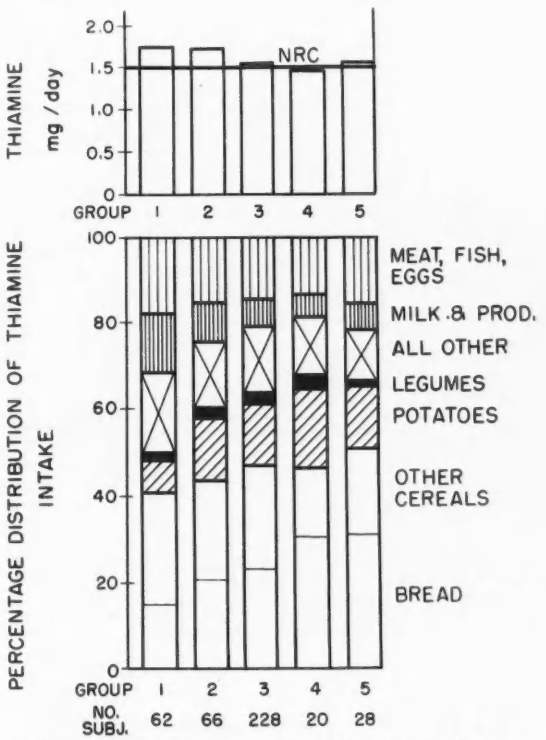

FIG. 3. *Percentage distribution of thiamine intake among food groups, plus comparison of intake with Recommended Dietary Allowance* (3).

Iron. Potatoes contributed significantly to the iron as well as the thiamine intake. Cereals and potatoes together provided 51 per cent of the iron for Group IV; meat, fish, and eggs contributed only 19 per cent (Fig. 4). For Group I, approximately equivalent amounts of iron were provided by the total protein of animal origin and by cereals and potatoes together. For the indigent groups, the importance of cereals and potatoes as sources of iron became more obvious as the intake of animal proteins decreased. For the four indigent groups, from 44 to 51 per cent of the day's iron came from cereal and potatoes; from 22 to 28 per cent from the animal protein foods, including milk.

From 15 to 27 per cent of the daily iron intake (Fig. 4) was provided by enriched bread alone; in all, cereals provided 30 to 41 per cent, whereas animal proteins provided only 19 to 27 per cent. Had the cereals been unenriched, few women would have ingested as much as 10 mg. iron daily. These findings demonstrate clearly the worth of the present bread and flour enrichment program, for the dietary habits of the women studied here are probably common in many, if not all, rural and semi-rural areas of the northern section of the country.

Ascorbic Acid. The ascorbic acid intake was larger than expected (Fig. 5) due to the high consumption

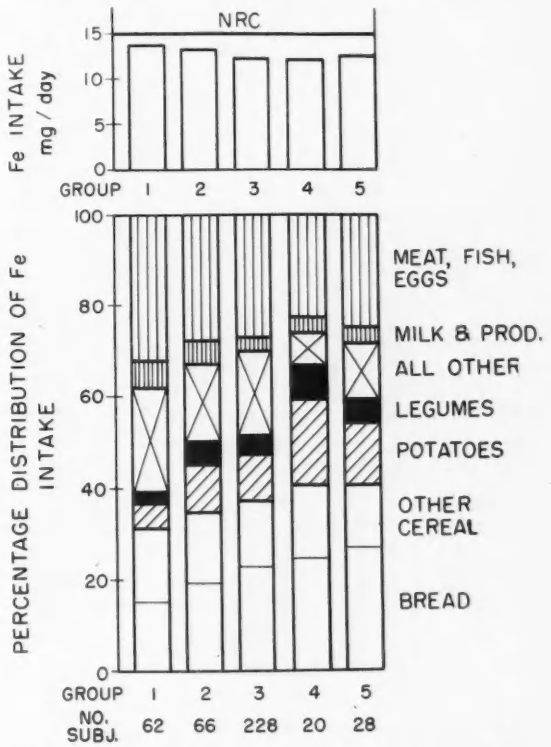

FIG. 4. *Percentage distribution of iron intake among food groups, plus comparison of intake with Recommended Dietary Allowance* (3).

of potatoes and tomatoes by the indigent women. Only those in Group I received any important amount of ascorbic acid from citrus fruits. For the other four groups, the amounts contributed by fruits and vegetables other than tomato and potato tended to be seasonal. In late summer, nearly all intakes were ample; by late winter, potatoes and canned tomatoes were almost the sole sources of ascorbic acid for these groups.

When a few sources of a vitamin are so rich that one serving provides the day's needs, the contribution made by lesser items of the diet is often disregarded. When the rich sources are not available, the lesser sources become important. Even though the ascorbic acid was conservatively estimated, potatoes contributed 15 per cent of the intake in Group I and 31 to 36 per cent in the other four groups. Only 6 of the 404 women received less than 40 mg. ascorbic acid; they were not potato-eaters. One is reminded again that, the world over, the lowly potato has prevented more scurvy than the lordly orange.

Vitamin A. Vitamin A was provided largely by fortified margarine, fruits, and vegetables. The fact that tomatoes and carrots were so heavily used undoubtedly accounts for the fact that mean vitamin A levels were adequate for each group (Fig. 6) since little vitamin A was ingested as milk and eggs by the indigent women. Of the entire group, 159 women or 39.5 per cent received less than 6000 I.U. vitamin A daily, but only 68 women (17 per cent) had intakes under 4500 I.U., and 8 women (2 per cent) ingested under 3000 I.U. daily. The diets of 6 of these 8 women contained less than 1800 calories; the remaining 2 received 1900 and 2100 calories respectively. None of the 8 drank milk regularly.

Riboflavin. The mean riboflavin intakes of each group were below the recommended allowance; the lowest mean value was 1.06 mg. daily (Fig. 6). Although only 12.5 per cent of the women achieved the recommended level, 31.5 per cent ingested 1.8

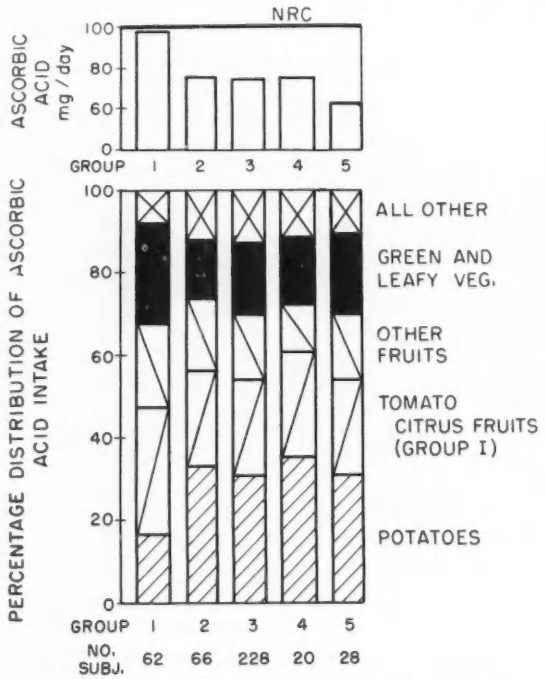

FIG. 5. *Percentage distribution of ascorbic acid intake among food groups, plus comparison of intake with Recommended Dietary Allowance* (3).

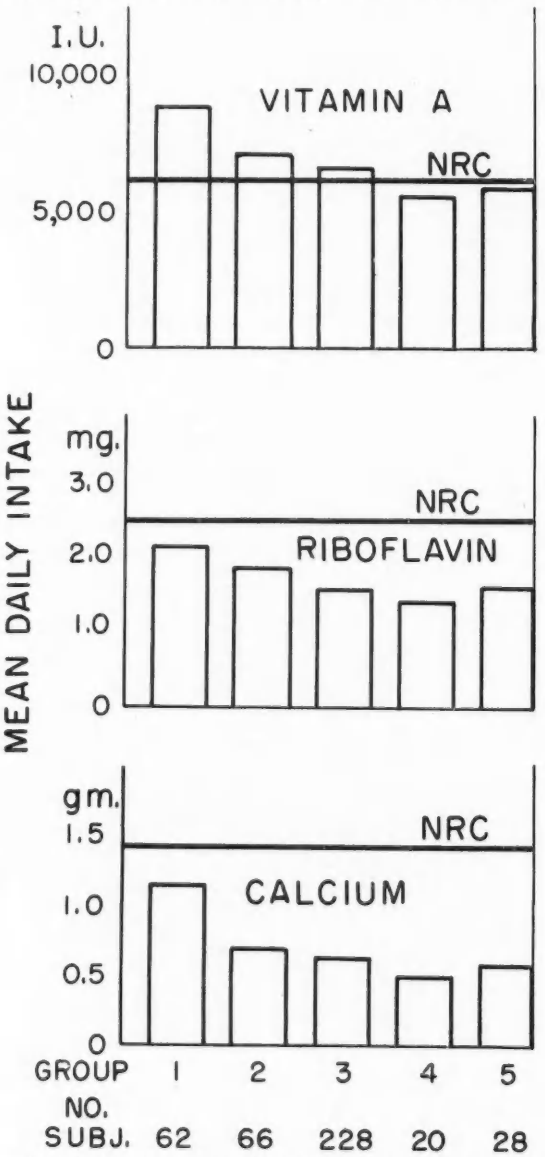

FIG. 6. *Comparison of intake of vitamin A, riboflavin, and calcium by pregnant women with Recommended Dietary Allowances* (3).

mg. or more daily, and 68.5 per cent received more than 1.25 mg. (half the allowance). The enrichment of bread and the eating of liver in fair amounts account for the fact that the riboflavin intake was not still lower. Again an extra pint of milk daily or its equivalent in nonfat dry milk solids would bring the riboflavin intake up to safe levels for the majority of these women.

Calcium. It is not surprising, perhaps, that 92 per cent of the women received less than the recommended allowance of 1.5 gm. calcium daily. The surprising fact was how very low the mean calcium intake levels actually were. Only 63 (13 per cent) of the 404 women ingested more than 1 gm. calcium daily, and 290 women (72 per cent) received less than 0.75 gm. calcium or half the allowance. Eight of the 62 student wives, notwithstanding specific instructions regarding calcium need, took less than 0.5 gm. daily. Similarly, 23 of 66 farm women; 128 (56 per cent) of the town labor group; 16 of 20 unemployed; and 15 of the 28 unmarried women (a total of 47 per cent of the entire group) regularly ingested less than 0.5 gm. calcium daily. This amount is insufficient for maintenance of a non-pregnant woman (4). It is not surprising that osteoporosis is common in women by the end of the child-bearing period.

This deficiency in the use of milk in a dairy state by a population who could have financed its purchase by better choice of food expenditure was somewhat unexpected, particularly so in the case of the young women. Only in Group I, the wives of students, were the majority of the women habitual milk drinkers, and one-third of this group drank less than a pint of milk daily. The situation for calcium is in marked contrast to that for iron, considerable amounts of which are automatically furnished in the enriched bread and other baked goods. It seems that maximum enrichment of bread with nonfat dry milk solids in addition to the present enrichment would certainly benefit the nutrition of those population groups who are heavy users of bread and baked goods. Such addition would increase not only dietary calcium but the intake of animal protein and of riboflavin, which tend also to be in short supply. Increased use of milk, either as fluid milk or as nonfat dry milk solids by these women and their families would result in marked nutritional improvement.

Protein Index. The data were reclassified into five groups according to decreasing protein intakes. The divisions and number of subjects in each group were as follows: A—37 women, 85 to 133 gm. protein; B—87 women, 70 to 84.9 gm.; C—103 women, 60 to 69.9 gm.; D—101 women, 50 to 59.9 gm.; E—76 women, less than 50 gm. daily. The mean values for the various nutrients ingested by each group are shown in Figure 7 depicted as per cent of the recommended allowance. The mean intake of each nutrient ranged in the same order as the mean protein intake for the various groups. Many individual exceptions to the rule occurred, but the mean findings were consistent for each nutrient. If, as the data of Figure 7 appear to show, the mean daily intake of protein can be used as an index of the adequacy of the entire diet, it is certainly understandable that the status of the infant varies directly with the protein content of the maternal diet (5, 6). It must be noted, however, that the dietary patterns shown in Figure 7 may not be true for women whose food habits differ considerably from those reported here.

In Figure 7 is illustrated again the relative adequacy of intake of calories, vitamin A, thiamine, and iron in terms of the recommended allowances. Only

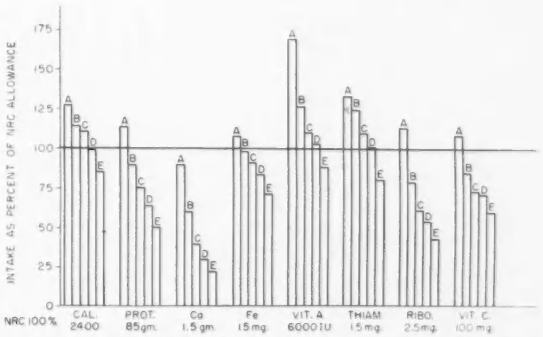

FIG. 7. *Daily intake of nutrients by 404 pregnant women, classified according to daily protein intake. Groups are listed in text.*

TABLE 2

Distribution of the economic classes according to protein intake

ECONOMIC GROUP	NUMBER OF SUBJECTS					
	Protein intake 85 gm. or over daily	Protein intake 70 to 85 gm. daily	Protein intake 60 to 70 gm. daily	Protein intake 50 to 60 gm. daily	Protein intake less than 50 gm. daily	Total
I	20	19	12	6	5	62
II	8	24	16	12	6	66
III	8	32	69	70	49	228
IV	—	4	3	5	8	20
V	1	8	3	8	8	28
Total	37	87	103	101	76	404

7 per cent of the 404 women received less than 75 per cent of the allowances for thiamine and vitamin A. In contrast, 59 per cent had less than three-fourths of the allowance for protein, 68.5 per cent received less than three-fourths of the allowance for riboflavin, and 91 per cent were ingesting under 1.2 gm. calcium. Were 1 qt. milk or its equivalent in milk products to be added to the daily intake of those women not drinking milk in quantity, even for those classified in the lowest group with a mean protein intake of 42.5 gm. and calcium of 0.34 gm. daily, the mean protein intake would have exceeded 75 gm. and the intake of calcium, riboflavin, and calories would have equalled or approached the recommended levels. In fact, any considerable increase in milk intake would improve the nutrition in respect to those nutrients now present in least amount.

The figures in Table 2 indicate again that economic status, although important, was not the only major factor involved in choice of food by these women. With one exception, women from each economic group were in each of the five classifications of protein intake. Education in nutritional requirements appears to be even more needed than increase in purchasing power for these families.

SUMMARY

The dietary habits of 404 pregnant women of low income in a predominantly rural area (Iowa) have been analyzed.

The data presented indicate faulty dietary habits in a large section of the population of Iowa and suggest that they are at least as important as food costs in determining foods eaten. The caloric intake of the women was usually adequate; 93 per cent received more than 1800 calories daily; 61.5 per cent ingested 2400 or more calories a day.

The distribution of calories was weighted heavily toward bread and potatoes. It is considered that the predominant part played by cereals and potatoes in the dietary is probably common to many rural and small-town Americans of North and Central European origin. These foods are still the staple fillers for people doing manual labor. The high consumption of potatoes is undoubtedly important in preventing deficiency of ascorbic acid and of iron.

The fact that the bread is enriched has certainly kept the majority of women of this study from deficiencies in iron, thiamine, and riboflavin. The usefulness of the enrichment program is obvious. It appears that, in addition to the present program, enrichment of bread with a greater amount of nonfat dry milk solids also would improve the nutrition of these women and their families by automatically increasing their intake of calcium and animal protein. In fact, the enrichment of all bread with nonfat dry milk solids to the maximum amount consistent with production of a good loaf would automatically improve the diet of the general population of the northern half of the United States in those nutritional factors now most commonly deficient.

The need for greater intake of milk and milk products is of major importance in pregnancy. The addition of even a pint of milk daily would better the intake of protein and riboflavin in the poorest diets to a real degree and would more than double the present intake of calcium of nearly half the women. A quart of milk daily would produce the greatest dietary benefit of any single food addition, for calcium, protein, and riboflavin are present in least amounts in the diets of these women. The use of low-cost dry milk solids would benefit greatly those unable to buy sufficient fresh milk.

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Coffee Check List

The National Coffee Association has prepared a 10-point check list to help rate coffee according to established and tested standards. The questions are:

When the coffee supply is ordered, do you always specify the correct grind?
In making up the brew, do you always measure both water and coffee?
Do you make coffee frequently?
Do you keep it at serving temperature?
Do you use freshly boiling water?
Is the coffee-making done by trained employees?
Do you clean your coffee-making equipment daily?
Do you give the equipment special cleanings twice a week?
Do you make special double-strength coffee for iced coffee service?
Do you personally sample your own coffee several times a day?

—*From Hotel and Restaurant News, 26: 2 (September 29), 1951.*

Practical Personnel Management[1]

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IT HAS been stated that the supervisor's job consists of 85 per cent human relations, 10 per cent administration, and 5 per cent technical activities. Considering the years of formal education dietitians must have to handle the 5 per cent technical activities, it would be interesting to know how many of you received a single formal credit hour of college work which would be helpful in carrying out the 85 per cent of your total work load in human relations. It would appear that you studied the most for the smallest requirement and did not prepare yourself at all for the major responsibility. Could it be possible that the schools never thought of you in the role of supervisors? If the above percentages are valid, it would appear that the curricula for your work need severe overhauling consistent with management requirements.

At any rate, in this enlightened year most new supervisors enter such positions without the benefit of either previous formal or on-the-job training in supervisory techniques. In addition, few organizations, companies, or businesses offer management training courses to care for this deficiency, indicating that even top management considers it acceptable policy to employ highly trained technicians, who may be untrained as supervisors, to handle one of its most difficult problems—that of personnel.

While many people—either through choice, temperament, or mental characteristics—neither desire nor should become supervisors, most of us do aspire to positions requiring supervisory or executive ability, even though most would-be supervisors have little or no appreciation of the responsibilities and headaches of the supervisory position.

THE SUPERVISOR'S RESPONSIBILITIES

A supervisor has many types of responsibilities. The term "supervisor" implies that he supervises, and the extent of that supervision may extend from managing a single employee to managing a unit or even the total organization. The implication should go further: if the supervisor has charge of a unit, he should be held accountable for all that happens in that unit and he should be given adequate authority to carry out the involved functions and related activities. He should be able, within reason, to use his own judgment on many administrative matters and not be subjected to undue interference from outside authority. Obviously, then, he must be able and competent to fulfill the requirements demanded of him.

He must initiate new methods and ideas, and through him, these ideas must become actuality. He must plan for the flow of new types of work through his unit. To do this, he must obtain the cooperation of his employees and train many of them in new operations. He must plan every job in some detail before starting it, which requires inventiveness or the ability to think of new methods.

He must be able to develop an efficient staff of employees. Closely related to the problem of staffing is that of employee evaluation, whereby the supervisor must weed out the incompetent, counsel with deficient or unsatisfactory employees, and promote those who merit promotion.

Whether he realizes it or not, one of the primary requirements of a supervisor is that he be an instructor (not an instructor in an academic sense, but surely in a practical sense). Training new employees, retraining present employees, and instructing even his immediate supervisory subordinates require much more time than is usually realized.

He must supervise and/or maintain various types of records. Records should not be an end in themselves but should be used as a means of analyzing, organizing, revising, correcting, or improving present work procedures, techniques, or operations. As an example, if you have a problem of excessive tardiness, then you must question whether you have competent supervision. Here is a case where records, in themselves, are completely valueless unless realistic use is made of them by the supervisor.

A supervisor is by necessity a disciplinarian of his employees. Discipline is not the supervisor's most pleasant task, but if approached from the aspect of correction rather than punishment, he is offered his

[1] Presented at the Conference of the Michigan Dietetic Association in Flint, Michigan, on November 9, 1950.

greatest opportunity for real service to his organization. He can use discipline either as a constructive force or, as an autocrat, he can destroy loyalty, morale, and efficiency. Few supervisors possess that happy intangible of knowing when, how, and what to do with discipline.

The supervisor must establish work schedules. He must always meet deadlines. Work never comes evenly throughout the twelve months of the year, and schedules must be changed to meet deadlines.

The supervisor and his department usually have a public relations job in dealing with the public or even with other departmental personnel. This may involve a "selling" job of day-to-day operations or a new service.

Regardless of how able a supervisor may be or how efficiently his department is run, he is continually confronted with problems. He may think he has eliminated all of his problems only to find in a few hours that new ones are facing him. These problems may concern operations or personnel. They may be minor or exceedingly important. If the supervisor is alert, he can, in many instances, anticipate or sense situations that later become real problems. The more situations he can eliminate, the easier his job will be. To handle intelligently the more difficult problems, he should consult and advise with his superior before taking any action. (An ill-taken action can have repercussions from other units of your organization, or from the public; have a bad effect on employee morale; involve the union; affect the supervisor's prestige; or any number of reactions.) Make no mistake about it; a supervisor is a problem solver.

Top management expects the supervisor to maintain a keen interest in his work. They expect him to be alert and to direct his activities in an energetic manner. His position is not for a timid or hesitant soul. To do his job satisfactorily he should be a trained leader. This leadership requirement brings us to a discussion of those aspects of his responsibilities involving personnel administration.

THE SUPERVISOR'S JOB AND PEOPLE

There is no part of a supervisor's job that does not involve people. One of the maxims of supervision is: *a supervisor gets results through people.* Thus one of the necessary skills of a supervisor is that of leadership, or his ability to work with people. An analysis of a supervisor's usual responsibilities—output, planning, work schedules, training, and contacts—shows the common factor among them to be that people are involved.

Let's see if this is true. Take output, for instance. Who gets the work done in your department? People. In planning the work, who will carry out these plans? People. What about work schedules? People carry out the work schedules. Training certainly involves people. Contacts may involve employees, the public, salesmen, or interdepartmental personnel.

EMPLOYER-EMPLOYEE RELATIONS

An analysis of the supervisor's job, with relationship to its involvement with people, takes us naturally to the general aspects of employer-employee relations. For the purpose of this paper, the field of employer-employee relations may be divided into two parts: one covering general principles, and the other relating to specific problems. For the moment I wish to cover some of the general principles.

Employer-employee relations, or job relations, are the everyday relations between you and the people you supervise. Your relationships affect the results you get. Relations with some are good, with others are poor, but there are always relationships. Poor relationships cause poor results; good relationships cause good results. When a supervisor wants to meet any of his responsibilities effectively, he must have good relations with his people. Some supervisors have the happy faculty of maintaining good relations with their employees at all times. Others seem to have more than their share of problems with their employees. But more important is the fact that top management is likely to judge your supervisory ability entirely by the number of grievances that originate in your unit and which eventually must be settled by them because of your inability to solve them. Units of an organization in which troubles or difficulties are common are usually headed by supervisors of questionable caliber. Thus the more problems you can identify, sense, or anticipate and settle right in your own unit before they go further have a tremendous effect on your status as a supervisor.

PRINCIPLES OF GOOD SUPERVISION

Experience indicates that successful supervisors use *four* principles to establish and maintain good employee relations. The first principle is that of *letting each worker know how he is getting along.* We all like to know how *we* are doing our work. If our work is unsatisfactory to our superior, the sooner we know it the better. Then we can clear up misunderstandings, perhaps straighten out confused situations, get a new slant on our own thinking or behavior, and more fully understand each other. Employees are not mind readers, and if their work does not measure up to your standards, it's up to you to counsel with them. If no one ever compliments my work, I can never be sure I am doing the standard of work I like to think I am doing.

Closely related to the principle of "letting each worker know how he is getting along" is the second: *giving credit when due.* Consistent with the necessity of reprimanding a delinquent or unsatisfactory em-

ployee, it is only proper that the employee who does a satisfactory job be complimented. To do so costs nothing, and it pays dividends. Naturally most of us would like to reflect the work of a superior employee by an increase in wages, but frequently this may be impossible. However, genuine and sincere acknowledgment from the boss of a job well done is taken home and discussed over the dinner table with a sense of real pride. Psychologically, each of us is striving for recognition. The employee who didn't feel well, but stayed on after work to help you finish an important job and the worker who always seems to anticipate your next move are the ones who surely are entitled to your commendations. If a superior does not acknowledge our worthiest contributions, then he fails to utilize one of man's finest incentives.

The third principle is: *tell people in advance about changes which will affect them.* People resist change. Once we have an established living pattern and have developed habits, we dislike and oppose changes in those habits. People with or without good reason fear the unknown, and if an adequate explanation for changes is given, acceptance rather than resistance may be obtained. Changes in schedules, rules, operations, or working conditions may be violently opposed by employees unless they are forewarned and given an intelligent explanation as to the reasons for them. If you had reported for work at eight o'clock for several years and suddenly were told that the starting time was to be at seven, you would certainly expect to know why. If, with all your present work, you are told that you must assume additional duties or if your work assignment is to be changed materially, you, like any of your subordinates, expect more than a passing remark to justify the changes.

The last principle is that of *making best use of each person's ability.* Each of us has definite aptitudes, abilities, likes, and dislikes. Some like routine, repetitive, and maybe even monotonous tasks, while others only work best when their duties are diversified or thought-provoking. People work best when they are using their highest skill involving a high interest factor. A good salad cook will never make a happy and contented potato peeler. A task that for one person may be boring, monotonous, difficult, or unpleasant may prove to be, for another employee, interesting, agreeable, appealing, and easy.

It is axiomatic that an individual with a high level of intelligence should not be placed in a routine and repetitive job. Likewise, you would not assign a person with a low mentality to the most complicated or diversified position. People are not satisfactory employees whose work requirements exceed their abilities, for they are always working under stress due to excessive physical or mental demands in trying to accomplish the impossible. Matching requirements of the job with the assets of the workers can pay dividends. Inventorying your employees as to their likes or dislikes concerning available positions and their reasons, could disclose some startling job preferences. A few tryouts, in turn, might result in improved working efficiency, morale, and work attitude.

THE EMPLOYEE AS AN INDIVIDUAL

Your employee is an individual, and his individuality must be understood, for it affects you and your job as a supervisor. No two people are alike. A group of employees cannot be handled like a machine; rather, each employee must be handled as a separate entity and according to his individual characteristics.

Let us consider what affects an employee as an individual. We know that his background makes a difference. Isn't there a difference between a person who grew up on a farm and one who lived in a city; a university graduate and one who went to school only for a few years? His family can make a difference. A single man doesn't have the same interests as a married man with a family. Health can affect the individual. A person who has been in ill health for a long time has a different outlook from one in good health. His job, too, can create a different viewpoint. Religion, hobbies, standards of living, extended frustrations or resentments, childhood experiences, and many other factors can and really do affect the individual's work. He doesn't leave part of himself at home when he comes to work. If he has family troubles, he carries them to work with him. If he is not well, he does not leave his ill health at home. Financial worries, outside activities, future plans, all come to work with him and affect his work. You need to know this person as an individual because he is different and that affects him on the job.

In short, people cannot be handled like equipment or apparatus. Each is an individual. Stereotyping them, classifying them, standardizing them, or reducing them into formulas – habits of thinking that work well with inanimate objects – won't work in handling people.

It must be remembered that to the worker a job means more than a pay check and doing the same operation over and over between morning and night. It means that he is part of an organization wherein he has a particular place. It means that he is a human being who wonders what kind of people his fellow workers are, what they expect of him, what his importance is to the total organization, what your respect for him is as an employee, and so on.

Any supervisor can look back and remember things which happened when he himself was a worker. What difficulties did you, for instance, run into? Try to look at the department situation through the worker's eyes. The supervisor facing the difficulties of getting out the work of his unit may easily overlook his workers' difficulties. It is natural for him to

think more of results and to spend little time on people, yet there are conditions in each department which hinder the employees' achieving full productiveness quickly and easily and prevent the development of wholesome attitudes toward associates and the department.

Do not assume that an employee is a misfit in a job until he has been fully and correctly instructed on the job and has shown that he cannot do it successfully. Many men who have been called misfits on jobs never had a fair chance to learn. Often a slow learner makes an excellent worker. It is a misfortune for him if he must begin the job under a supervisor without patience and willingness to instruct. Do not assume that when a worker is a misfit in one job he is useless. Few misfits are totally unsatisfactory. Get acquainted with the employee, win his confidence, discover what he can do and likes to do, find out his difficulties on the job and see that he either learns it or gets a fair chance before separating him from the payroll.

If new workers present a problem to you, the older workers in point of service present a real challenge. These are the employees who have established work habits and all too often patterns which are difficult to alter. If you are a new supervisor, they may resent your advice; they may feel that they know—and perhaps they do—more about the work than you. They may feel that they should have been promoted instead of you. This still does not relieve you of the problem of supervising them and bringing them to your way of thinking. More than ever, you must attempt to understand these people as individuals, you must counsel with them, and using a firm but kindly attitude, mold them into a working team.

I should now like to turn from generalities to some of the specific problems of supervisors, such as: staffing, training, communications, employee evaluation, public relations, and discipline.

STAFFING OR EMPLOYMENT OF NEW WORKERS

One of the supervisor's greatest gambles is his attempt to staff his unit. Employees always have made life miserable for the supervisor through separation, either by resignation, transfer, retirement, discharge, or death. Separation for any reason adds up to the necessity of obtaining a replacement, and therein lies the gamble.

Turnover begins with hiring. It is elementary that turnover among skilled workers costs money. Among unskilled, new personnel it is even more costly. Not only do such workers take a considerable time to learn their jobs and to produce enough to earn their keep, but they also require a large amount of expensive supervisory time during their training and often damage goods or good-will in their learning process.

The employer's right to hire the potentially most efficient worker is still largely unabridged, and it is here that substantial savings can be achieved, for many of the causes of turnover stem from the initial hiring.

It is now acknowledged that hiring can be done just as inefficiently by engaging people who are too good for their jobs as well as by taking on others who are not good enough. And it can be done badly in other ways.

At Hurley Hospital we employ a large number of food service helpers. In recruiting for these jobs, we find that all candidates, with but few exceptions, are either untrained or without experience. Most are looking for only a job. Thus the type of work involved or their interests are purely of passing concern. Some are seeking employment for the first time, some for times too numerous to mention. Some are housewives or widows in their forties or fifties whose economic status forces them to work after a somewhat sheltered life and establishment of fixed personal habits. Some have several children with inadequate or non-dependable arrangements which would prevent their becoming dependable employees either in regard to their work attendance or mental freedom from worry. Others by temperament, whether single, married, divorced, or widowed, should never work in a large organization or cannot adjust to a rigid work schedule.

How about these people as individuals? They are loaded with individuality. After they have been on the job a while you learn a number of things about them. Some can't get along with you or their fellow workers and, it would seem, have difficulty getting along with themselves. Ruth enjoys bad health. Agnes always appears to be complaining. Mary spends more time in the restroom than she does at her work station. Mildred's feet hurt, and please, can't she have a sitting down job. Mabel can't stand drafts, and so on.

When you buy a complicated piece of equipment, a handbook comes with it to tell you how to operate it, or perhaps someone from the company comes to show you how to run it. But no handbook comes with a new employee. And what is more complicated than a human being? And what is there that we deal with, that we know less about, than a new employee, reference verifications to the contrary? We know all too little about this employee: what are his likes and dislikes; his adaptability to a new type of work; his interest and work attitude toward his new job; his reliability; his cooperativeness with you and his fellow workers; his mannerisms; his work habits; his personal habits and cleanliness; his adeptness at learning established routines; his reaction to criticism?

It is your job to develop each of these question-mark employees into a contributing member of an efficient organization.

Most inexperienced people are usually hired by an interview. They are asked whether they would like

to do the kind of work offered; the answer is, naturally, "yes." The question "why?" may be answered in a variety of ways, ranging from "I think it would be interesting" to "I need a job." Obviously, none of these replies can establish satisfactorily the competence or aptitude of applicants or their potential usefulness.

If the applicant's manner is pleasing, if he comes well recommended, or if his appearance conforms to the supervisor's notion of how such a worker should look, he is hired. It is easy for an applicant to say, "I'd like to work for your hospital; I've always liked that kind of work." But, for a number of reasons, his statement may not be true. It is at this point that a solution is needed. Can ability or aptitude be recognized by looking at or talking to a job seeker? Few, if any, authorities on personnel administration will answer that question affirmatively. Today, intelligence, aptitude, interest, and achievement tests are scientific tools as essential to efficient management as are central purchasing, billing machines, and cost accounting.

Tests can determine acquired knowledge, aptitudes, or interests. A well designed application form can tell you much about the background of the candidate. Checking by phone or mail can verify the standard of previous work experience, which, if in similar work, is probably the best criterion for predicting satisfactory future performance. An oral interview offers a face-to-face meeting with the candidate to observe mannerisms, speech, appearance, and other personal characteristics. Considering that most employers rate personality as one of the most important, if not the most important criterion in hiring, the oral interview is absolutely essential. Finally, the physical examination rules out the medically unfit.

No doubt some organizations have such a comprehensive testing program as I have just outlined. Others do no more than interview. A minimum hiring procedure in my judgment would consist of a well designed application form, an oral interview, references checked and verified by phone or mail, and physical or medical examination. Personal references are usually useless; where possible, business references should be required.

The most difficult type of employee to hire is the inexperienced and unskilled. This is primarily because there is no work history or one not strictly comparable. The best hiring techniques in use today still leave much to be desired; thus hiring is the supervisor's greatest gamble.

TRAINING

We come now to the subject of training or developing your staff. Insofar as this paper is concerned, I am going to restrict the subject to the need for, and the barest essentials of on-the-job training.

Many people little realize the great amount of training taking place in every organization every day of the year—formal training program or not. For instance, what was the turnover of your particular unit last year? At Hurley Hospital we had a 30 per cent turnover which meant we hired 189 new, full-time regular employees. Training? Whether we were aware of it or not we did an immense and costly amount of training. To start with, every new employee must be trained in departmental policy, practices, history, and organization, before anything approaching satisfactory work performance can be expected. A new worker, no matter how experienced, when undertaking a new job, is starting a strange job and needs "breaking in." If a clerk is transferred from the information desk to the business office, training must take place; if an employee is promoted, training is required. The only difference between a twenty-year-old clerk and the same man when he is a division head is training of one kind or another. Call it experience if you will, but that's what training is—profitably directed experience. Training does not necessarily imply formal schooling, for formal schooling is but one segment of the training problem. The 189 employees hired by Hurley last year necessitated many hours of instruction on the part of our supervisors—hours that they could have put to good use in other channels—hours that cost the hospital money. What did training cost Hurley Hospital for the new employees alone? We don't know for part of it is a hidden cost, but my guess is $15,000. Although not one penny may be budgeted for training purposes as such in your organization, the hidden cost is just as real.

Training, here, is used in its broadest sense. It may take place individually or in groups, on the job or in the classroom, in the conference room or at a supervisor's desk. It may occur as part of an orientation program for new employees or at a staff meeting of the top administrators; it may come from the employee's manual or from a directive from the chief executive. Although training is so frequently associated with classrooms and blackboards and although such facilities, of course, have their place, it should be emphasized that much valuable training takes place where the work is done.

Most training is ordinarily concerned with direct job instruction. Through such instruction, new employees acquire technical knowledge and skills they need to do their work successfully; experienced employees keep abreast with changing methods and procedures and learn new ways to do their present jobs with increased effectiveness or become prepared to fill jobs of greater difficulty and responsibility.

Training falls into two categories: training of the new employee, and later for increasing his effectiveness or for promotion. Formal or informal orientation starts the new employee's training. He must be informed, for example, about the rules and regulations governing his employment, about hours of work, provisions for sick leave and vacations, causes for termi-

nation, and all other personnel policies and practices which so intimately affect him. Many organizations, moreover, are finding it worth while to provide new employees with an understanding of the aims and purposes of the organization as a whole, of the functions and location of its various parts, and of how their own jobs fit into the total picture.

A new employee, no matter how well trained, needs instruction concerning the job to which he is assigned, for his new work situation differs in many respects from that in his last employment. Experience has shown that in many cases the investment of a few hours of time in making sure that the new employee has a clear understanding of his duties and how he is to perform them is sufficient to bring large returns through reduction of errors and in time required to achieve a satisfactory level of performance.

Inexperienced employees, on the other hand, are an entirely different story. Unfortunately, they are not mind readers and accordingly will usually do their work in a manner correlated to some degree with the kind and caliber of instructions given them. If you are the type of supervisor who expects procedures to be followed to the letter and quality of work to be performed at a high standard, then you should give new workers instructions which are well planned, accurate, and thorough. They are not clairvoyant. With poor instructions, they will guess what you want of them. If they guess right, then you assume they are following instructions. If they guess wrong, then you think they are "dumb." Of course, your old employees make allowances for your training shortcomings. They have learned your idiosyncrasies and at the same time what you expect of them, so they try indirectly to help you out.

Where are employees to receive the instruction they need? By whom is the instruction to be given? Usually the supervisor offers on-the-job training. This involves instruction and teaching on how to perform the actual job. For most of our units, the only economical and feasible way to train is by utilizing the services of regular operating supervisors. Small units could not afford to maintain special instructors, even if it were possible to find people qualified to teach all the things employees need to know. Frequently, moreover, the work is of such a specialized nature that only those who do it or supervise it are qualified to teach it. It has been estimated that approximately 85 per cent of the necessary instruction can be provided most effectively through the regular supervisory force.

COMMUNICATIONS

Management asks: "What's wrong with the American worker nowadays? Where are the old loyalties, pride in work, and the desire to give a day's work for a day's pay? What have we done to deserve featherbedding, griping, interminable grievances, and apparent lack of interest?"

The answer seems obvious. Management has permitted itself all too often to be pushed further and further away from its employees by a combination of self-imposed barriers or by intentionally making it difficult to communicate with its employees.

How effectively do you as a representative of management talk to your employees? Can your employees "talk back"? Does the chief executive of your organization do all the talking for management? Does the union representative do all the talking for the employees? The supervisor whose desk is right out in the middle of the work area has a greater opportunity for personal contact than the supervisor whose office is up "front." The wider the gap between supervision and employees, the greater is the tendency for the two to become strangers. When the worker feels that he "just works here" and does not consider himself as "belonging" to the organization, then management can try all the tricks in the book to get high output and loyalty, and it will only "waste its breath." Loyalty and workmanship come only from people who *want* to be loyal and who *want* to do a good job—chiefly because someone is interested in them, their problems, their opinions and viewpoints, and to recognize that they exist.

The average employee likes to know what is going on. He has ideas, and those ideas can be valuable to the organization. His opinions are important to him. Like you and me, he is eternally seeking recognition.

Communications can be written or verbal. The house organ can take care of the written communications. You, as a supervisor, can and should handle the verbal communications. There is no substitute for free verbal communication between one, two, or more individuals to create understanding and appreciation of human effort and its coordination toward a common objective.

PUBLIC RELATIONS

The caliber of public relations which exists in any unit of an organization can be directly attributed to the supervisor of that unit. Unfortunately, too many of us incline to wishful thinking about the whole matter of public response. It is not enough to believe that good-will is an automatic return for good work. The amount of awareness which a supervisor maintains toward the public relations of his organization and the training and corrective work he does will in turn generally determine the type of public contacts which the unit enjoys. Many of us might blush if we really knew the impression our department makes on the public. We might well question whether our employees are courteous, show restraint and dignity when dealing with an aggrieved citizen, give full and detailed information over the phone or at the counter, whether they say "no" when they must, and take the trouble to explain why to the citizens involved. Terms such as courtesy, diplomacy, and tact are elementary in a discussion on public relations; yet how

long has it been since these words have been used in instructing new or old employees in your department?

Those of you who look for ready-made plans and easily applied techniques to solve your public relations problems will not, of course, find the answer. Indeed, there probably is little that can be lifted bodily and put to work in another unit without adaptation. The only purpose I have here is to inspire careful diagnosis and self-criticism of individual situations. The duties of some departments are primarily public contact in nature, others are not. As the supervisor, however, you are in the best position to analyze the public relations involved and determine what corrective measures, if any, are necessary.

DISCIPLINE

Discipline is not only one of the most important responsibilities of a supervisor; it is, without question, the most distasteful. Disciplining an employee is an unpleasant task, and if the supervisor lacks the fortitude to handle his disciplinary problems, he should aspire to a position where the duties are routine and do not involve handling people.

Please do not misunderstand me. I am no more a proponent of strict discipline than I am of too much leniency. Both are undesirable in modern management.

The strict disciplinarian rules with an iron hand and maintains a constant state of fear in his employees. In his organization the rules and regulations are legion. Each time an employee reveals a loophole in the regulations, it is straightway closed by the adoption of a new rule, or a new sub-section of an old rule. The determining factor thus becomes the most unruly or rebellious employee. This is the type of supervisor who regards discipline as a primary tool of supervision, a tool that should be employed frequently and with vigor.

At the other extreme is the supervisor who is too lenient. Lenient management actually invites or encourages poor conduct by employees. Unless offending employees are disciplined, the personnel problems of management will pyramid. Respect for the supervisor is lost, morale and efficiency suffer. Employees cannot do their best under a weak and vacillating management.

What then of the middle-of-the-road course of discipline? Strange as it may seem, employees like discipline which is fairly and impartially administered. Most people are honest and sincere. They resent their fellow worker who does not apply himself. They expect the supervisor to do his part as their leader in such cases. When an individual employee is not doing his share, the staff is quick to sense it and rightfully expect action from the supervisor. There is still a more important reason why employees like discipline. It is because they know and feel it is directly beneficial to them as a group. The irritations of a job are at a minimum when absences are not excessive, when everyone starts working on time, when the pressure is divided fairly and evenly, and the group works as a team. Most employees are in favor of teamwork that helps to make the job more pleasant. The conscientious worker has much to gain through teamwork, which can be improved through constructive discipline.

To make effective use of discipline, then, we must look at the supervisor as a leader, rather than as an autocrat or a Milquetoast. The approach and methods of the modern school of supervisors are that the job of the supervisor is to develop and lead his subordinates. He does this by leadership, the maintenance of high morale, and the use of discipline as a constructive force.

I am using the term "discipline" in its broadest sense, and as such it covers a wide range of actions extending from a corrective criticism to that of discharge. Between the two extremes are the stages of oral reprimand, written reprimand, suspension, and demotion. The subject has many facets and many degrees of severity.

Possibly one of the simplest cases of corrective discipline involves employee evaluation. For example, a worker of several months' employment representing a considerable investment in wages and training is found to be unsatisfactory in some phase of his work or his personal attitudes. A face-to-face friendly discussion of his work with the employee by an understanding and helpful supervisor can turn what would have amounted to a chastisement into a constructive discussion. The employee has retained his dignity. He has been told of his shortcomings and asked for his cooperation. Misunderstandings have been straightened out, and a new respect for each other is born.

Even in the above simple case of discipline, however, lie several dangers. Too often the supervisor is at best a poor counselor who permits, or is unable to prevent, discussions between the employee and himself from developing into arguments. The supervisor must ask questions rather than make blunt statements. He must be patient. He must be a good listener. He should acknowledge the worker's good points and ask for his cooperation. But above all, no arguments.

In the more serious cases, the supervisor must move with caution. Before taking action, he must be sure that he has *all* of the facts. Not just one or two, because they may be immaterial. Not having all of the facts gives the supervisor an excellent opportunity to do an injustice to the worker and to make a mistake at the same time. Facts can be obtained only by talking, in addition to the employee, with everyone else involved. Facts will generally tell you why the employee is in trouble and at the same time how severe the case is. Having all the facts, the supervisor can and must decide what disciplinary action,

if any, will be taken consistent with corrective action. Will a discharge actually accomplish anything for the man or the organization? Will a suspension salvage the employee or will it permanently wreck his morale? What would a reprimand do in this case?

Punishment is *not* our goal. We can punish an employee by discharging him, but we also lose, in so doing, valuable experience possessed by the worker. We are at the same time confronted with the expense of hiring a new worker, possibly inexperienced, with all of its attendant problems of training and long-term development. Resort to stern disciplinary measures is the only practicable solution in some cases, and discharge may be the answer. From the negative side, the most important means for insuring individual efficiency lies in the possession, by those in authority, of the power to dismiss those employees who do not perform their work satisfactorily.

I should like to reemphasize, however, that the principal object of discipline should be to improve the performance or behavior of the offender rather than to punish him. In some cases, punitive discipline may be the best correction. In other cases, severe discipline may destroy the employee's spirit and thus diminish his future value.

Lastly, certainty and promptness in disciplinary action are usually more effective than severity. To advocate certainty in discipline does not mean, of course, that all who are guilty of certain offenses should be treated alike. Discipline needs to be tailored to individual measurements if it is to be most effective. Discipline should be based on general rules and standards of behavior which are accepted by employees as being reasonable, rather than on those of an arbitrary character.

SUMMARY

In conclusion, the goals and desires of the supervisor and employee may be summarized as follows: The *supervisor* wants a worker who likes his job, who knows his job, who wants to do a day's work for a day's pay, who wants to get ahead, who is always on the job unless excused, who gets along well with his fellow workers, who looks for a better way to do the job, who complains little, who asks questions when he needs help, who gets a "bang" out of a job well done, who tries to put himself in your place now and then, and who feels that his job is a privilege—not a right.

The *employee*, in turn, wants a boss who had something to do with hiring him and who wants him to work for him; who helps him when he is new to get acquainted with the job; who explains to him just what the job is and what he is expected to do; who will frequently tell him how he is getting along—what he can do well and what he can't do well and shows him how to do better; who takes a personal interest in him and his problems; who will stand up for him when he is right; who tells him about changes before they are made; and who is honest and four-square.

It's all really quite simple, isn't it?

Program for Weight Control

The American Medical Association through its leadership in establishing the Chronic Disease Commission has clearly recognized the need for a more vigorous attack on the medical problems of the mature population, among which obesity is a major problem. Accordingly, the Metropolitan Life Insurance Company, in cooperation with the American Medical Association and the Public Health Service of the Federal Security Agency, is this year undertaking a national weight-control campaign. The aim is threefold: (a) to recommend that weight control be carried out under a physician's supervision, (b) to emphasize the advantages of normal weight and adequate diets, and (c) to stress the prevention of overweight.

The program will encourage community health agencies to include weight control as an important part of health education. As a tool to focus public attention on the problem and stimulate action, the Metropolitan Life Insurance Company, with the cooperation of the Public Health Service and the American Medical Association, has produced an entertaining, educational movie short called "Cheers for Chubby." This color film will be shown in theaters throughout the United States. A longer version called "Losing to Win" has been made for television and for later use with community health agencies and other local groups.

A number of other national health agencies which have a logical interest in weight control, such as the American Diabetes Association and the American Heart Association, are making weight control an active part of their programs. The Metropolitan Life Insurance Company field force of 19,000 will participate in distributing educational literature on overweight in millions of American homes and by enlisting the aid of community groups. Many other persons and organizations interested in the subject, such as state and county medical societies, health departments, industrial organizations, and other voluntary agencies, will cooperate in the campaign.—*Excerpted from the Journal of the American Medical Association, 147: 1104 (November 10), 1951.*

Dietary Study Methods

V. Some Problems in Collecting Dietary Information about Groups of Children[1]

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EVALUATION of progress in the application of the science of nutrition requires investigation of food habits and nutrient intake concurrently with the health and well-being of people. In this area of research, tools and techniques are not well developed and new problems arise with each investigation. A study of conditions as they actually exist in population groups is complicated by many factors, such as size and location of the group, age and sex of the subjects, purpose of collecting the information, and facilities for analyzing the data. Exploration of methods for collecting data and evaluating results forms an important part of such research.

In 1948, the Kansas, Ohio, and Iowa Agricultural Experiment Stations with the cooperation of the Bureau of Human Nutrition and Home Economics initiated a study designed to ascertain the food habits and nutritional status of the school children of these three states of the North Central Region. This paper briefly discusses some of the problems in collecting and interpreting the dietary information and presents the results of preliminary studies which were made to help solve them.

[1] Contribution No. 5, Subproject 2—"The Nutritional Status of School Children: The School Lunch as an Influencing Factor"—of the North Central Region Cooperative Project NC-5, *Nutritional Status and Dietary Needs of Population Groups*.

This paper was prepared in consultation with the Committee on Dietary Study Methods—Elmira Blecha, Bertha S. Burke, Ercel S. Eppright, Ph.D., Helen A. Hunscher, Ph.D., Miriam E. Lowenberg, Ph.D., Thelma Porter, Ph.D., Charlotte M. Young, Ph.D., and Icie Macy Hoobler, Ph.D., Sc.D., Chairman. It was presented in part at the Panel Discussion on Dietary Study Methodology held during the 33rd Annual Meeting of The American Dietetic Association in Washington, D. C., on October 17, 1950.

[2] Iowa Agricultural Experiment Station, Ames; Journal Paper No. J-1970, Project No. 1021.

[3] Ohio Agricultural Experiment Stations; Journal Paper No. J-21-51, Project No. Ohio RM6.

[4] Kansas Agricultural Experiment Station; Journal Paper No. 164, Project RRF 272.

[5] Bureau of Human Nutrition and Home Economics.

STATING OBJECTIVES, DEFINING THE PROBLEM, AND RECOGNIZING LIMITATIONS

This is probably the most critical step in mass dietary studies. Objectives determine the size and organization of the sample, the method of collecting and evaluating data, the duration of the study, and many other conditions. Ideal planning might well include the setting up of data sheets and forms for summary tables in advance of the investigation. As in all research, intriguing by-paths may appear as the work progresses, but in mass studies such exploration must be of secondary importance. Revisions of plans for large-scale investigations of this type are usually costly in time, money, and effort. The clear conception of objectives and good planning for attaining them will help to eliminate errors.

The main objectives of the present cooperative investigation were: (a) to study the dietary habits and nutritional status of school children in order to formulate and evaluate nutritional requirements for this population group, and (b) to measure the effectiveness of the school lunch program as a tool for improving the dietary habits of the children and their families. Obviously these objectives pointed to the necessity of a thorough exploration of problems involved in collecting dietary information.

SAMPLING

Two important problems were the selection of subjects representative of the population and the selection of a period of time representative of the usual behavior of those subjects. The research nutritionist may depend on the statistician for technical aid in setting up the sample, but the nutritionist is responsible for supplying him with the information which determines the nature of the sample.

In the study of the school children of the three states, the design for sampling the schools varied with each state, inasmuch as each school system was differently organized. Preliminary steps in each instance involved listing the schools according to the

classification by population group and type of school. From these lists, the sample schools were selected according to a random sampling plan that gave each school the same chance of being included. The enrollment of schools chosen was then obtained together with information concerning age, sex, and school lunch practices. From this listing, a sample of children within the school was drawn. Details of the sampling of schools and of children will be given elsewhere.

TABLE 1

Nutrients in the average daily diets of the two groups of Ohio school children at two seasons

NUTRIENT	FALL		SPRING		DIFFERENCE*
	Average	Standard deviation	Average	Standard deviation	
School No. 1†					
					%
Calories	2129	407	2037	474	4.5
Protein (gm.)	67	25	64	23	4.7
Calcium (mg.)	876	323	891	325	−1.7
Iron (mg.)	13	4	12	6	8.3
Vitamin A (I.U.)	4356	3046	4526	2709	0.2
Thiamine (mg.)	1.21	0.30	1.21	0.33	0.0
Riboflavin (mg.)	1.70	0.55	1.59	0.50	6.9
Niacin (mg.)	12	3	14	12	−14.3
Ascorbic acid (mg.)	79	34	109	56	−27.5
School No. 2‡					
Calories	2468	615	2363	574	4.4
Protein (gm.)	85	21	76	22	11.8
Calcium (mg.)	1110	316	1095	382	1.4
Iron (mg.)	14	5	13	4	7.7
Vitamin A (I.U.)	6064	3949	6111	3296	−0.8
Thiamine (mg.)	1.48	0.50	1.43	0.40	3.5
Riboflavin (mg.)	2.10	0.67	2.00	0.62	5.0
Niacin (mg.)	15	6	13	5	15.4
Ascorbic acid (mg.)	73	40	78	49	−6.4

* Based on figures for spring month.

† 56 children; figures obtained in December and May.

‡ 52 children; figures obtained in November and April.

The influence of season on dietary data was investigated in the early part of the study. The data shown in Table 1 were obtained by calculation of three-day dietary records (Tuesday, Wednesday, and Thursday) of nine-, ten-, and eleven-year-old children in two Ohio schools during each of two seasons. In each of the schools, observations in spring and fall were made on the same children. There appeared to be no consistent significant seasonal differences in the average nutrient intakes of these groups of children, but the trends of the differences in the intakes of protein, iron, and ascorbic acid may be noteworthy. The consumption of protein and iron tended to be slightly greater in the fall than in the spring; the intake of ascorbic acid was greater in the spring than in the fall, especially in School Number *1*.

Study of this problem was also made at the Kansas Agricultural Experiment Station. For this group of fifty-three Kansas children, ages ten, eleven, and twelve years, the average daily intakes of only ascorbic acid and calories were significantly different in the two seasons (Tables 2 and 3). The average daily ascorbic acid intake was very significantly higher in the spring than in the fall; calories were also higher in the spring. Seasonal differences in protein and riboflavin intakes approached significance. This analysis was based on three-day records collected by the procedure used in the Ohio study. Although for several nutrients the coefficients of correlation between intakes at the two seasons were significant, they were not sufficiently high to indicate that a regression could be used for prediction purposes.

A further analysis of these data showed that the difference between the number of children whose nutrient intakes met the Recommended Dietary Allowances in the spring and in the fall was significant

TABLE 2

Nutrients in average daily diets of 53 Kansas school children at two seasons

NUTRIENT†	OCTOBER		APRIL		CORRELATION COEFFICIENT R	SIGNIFICANCE OF DIFFERENCE OF MEANS
	Mean	Standard deviation	Mean	Standard deviation		
Calories	2043	495	2209	510	0.50	*
Protein (gm.)	83	20	77	20	0.36	n.s.
Calcium (mg.)	1169	321	1175	640	0.21	n.s.
Iron (mg.)	12.9	4.0	11.8	3.3	0.29	n.s.
Vitamin A (I.U.)	5146	3794	5783	3297	0.08	n.s.
Thiamine (mg.)	1.45	0.43	1.33	0.30	0.15	n.s.
Riboflavin (mg.)	2.13	0.59	1.98	0.59	0.37	n.s.
Niacin (mg.)	11.7	4.4	12.6	3.7	0.19	n.s.
Ascorbic acid (mg.)	63	41	90	45	0.35	**

n.s.—not significant.

* Significant at 5% level.

** Significant below 1% level.

for ascorbic acid (at the 1 per cent level) and for protein (at the 2 per cent level). The limitation of the mean alone as a measure of the adequacy of a nutrient in the diets of a group of children was revealed by the fact that although the mean intakes of protein, vitamin A, thiamine, and riboflavin in both spring and fall were more than adequate, only half or less of the children (54, 30, 50, and 43 per cent, respectively) had intakes which attained the recommended allowances for these nutrients at both seasons. According to the results obtained in these two localities in Ohio and Kansas, consumption of foods supplying ascorbic acid and perhaps protein might be expected to reflect seasonal differences. This possibility should be considered in interpreting data, but in a large scale study such as this, the differences seemed insufficient to warrant sampling the diets of each child for each season.

The sampling of the days of the week presents another problem. Is one day as representative as another? Does the picture obtained from data collected on three or five consecutive days differ from that based on seven? This problem was studied in Kansas and Iowa. If three days are chosen, which three days are preferred?

The three-day dietary records of the group of fifty-three Kansas children were analyzed in several ways: as individual days, as two-day combinations, as the three-day average, and as total child-days. Percentages of the various groupings of records which were adequate in at least six of the "Basic Seven" food groups are shown in Table 4.

Dietary scores for the average of three-day diets in the spring were lower than for individual days, for any combination of two of the three days, or for total child-days. In this sample, daily variation in the fall happened to be much greater than in the spring, and low scores on Thursday limited the scores for all combinations including Thursday. Otherwise, the same trend was apparent.

A similar day-to-day analysis was made of the seven-day records obtained from one group of fifty city children in Iowa (Table 5). It likewise revealed

TABLE 3

Number of children in Kansas study whose diets met the Recommended Dietary Allowances of the National Research Council†

NUTRIENT	NUMBER OF CHILDREN			
	October	April	Both spring and fall	Significance of difference
Calories	9	14	7	n.s.
Protein	42	32	29	*
Calcium	24	17	10	n.s.
Iron	31	26	21	n.s.
Vitamin A	25	29	16	n.s.
Thiamine	38	35	27	n.s.
Riboflavin	36	28	23	n.s.
Niacin	25	28	16	n.s.
Ascorbic acid	17	30	13	**

n.s.—not significant.

* Significant at 5% level.

** Significant at 1% level.

† Recommended Dietary Allowances for children 10 to 12 years old: calories, 2500; protein, 70 gm.; calcium, 1200 mg.; iron, 12 mg.; vitamin A, 4500 I.U.; thiamine, 1.2 mg.; riboflavin, 1.8 mg.; niacin, 12 mg.; and ascorbic acid, 75 mg.

TABLE 4

Percentages of dietary records adequate in at least six of the "Basic Seven" food groups*

DAY OR GROUPS OF DAYS	ADEQUATE DIETARY RECORDS	
	Fall	Spring
	%	%
Tuesday	53	38
Wednesday	32	38
Thursday	24	45
Tuesday–Wednesday†	28	23
Tuesday–Thursday†	24	24
Wednesday–Thursday†	21	30
Tuesday-Wednesday-Thursday†	24	21
Child-days‡	36	40

* For criteria of adequacy see footnote of Table 5.

† Average.

‡ Based on 159 records, the total number of three-day records for 53 children.

TABLE 5

Percentages of Iowa elementary school children with diets satisfactory in certain food groups as calculated for single days and for three and seven consecutive days*

DAYS	PERCENTAGE OF CHILDREN USING VARIOUS FOOD GROUPS				
	Milk, cheese, etc.	Green and yellow vegetables	Citrus fruits, tomatoes, etc.	Other vegetables and fruits	Meat, poultry, fish, etc.
Monday	56	46	35	50	83
Tuesday	65	29	43	67	82
Wednesday	53	49	43	71	75
Thursday	55	55	35	51	84
Friday	51	53	43	55	82
Saturday	51	33	27	37	82
Sunday	43	41	45	57	86
Three days†	31	8	14	32	45
Seven days	18	2	2	6	24

* Criteria used were as follows: milk or equivalent, 3 glasses daily; green and yellow vegetables, 1 serving daily; ascorbic-acid-rich foods, as citrus fruit, melons, strawberries, 1 serving daily (tomatoes and cabbage rated ½ serving each); other vegetables and fruits, 3 servings daily; meat, poultry, fish, 1 serving (eggs, legumes, cottage cheese rated ½ serving each).

† Tuesday, Wednesday, Thursday.

differences in interpretation of data depending on length of time considered. The percentage distribution of the children according to the adequacy of their diets in the different food groups was about the same from day to day. The data obtained from the observations on any one day would give the impression that about half the children had satisfactory intakes of milk and the green and yellow vegetables, that slightly less than half rated as high for the ascorbic-acid-rich foods, and that almost four-fifths had the protein-rich foods in recommended amounts. But the percentages of children who had satisfactory intakes of foods from each group for three consecutive days were much smaller, and for seven consecutive days they were even less. Different children have adequate diets on different days. The proportion of children in a group who are maintaining a continuously good diet for three or seven days may be very different from the proportion as represented by a single day. Both the Kansas and Iowa data indicated that analyses of records for shorter periods within the week tend to be misleading in the direction of making dietary conditions seem better than they actually are.

An analysis of the food consumption of this group of Iowa children according to average number of servings showed that the use of milk, vegetables, and fruits was suboptimal, and that the week-end habits, particularly regarding milk and meat, differed from the school-day habits (Table 6). On this basis, except for the green and yellow vegetables, there was no difference among the averages obtained for any of the three-day groupings within the school week, or between the three- and the five-day groupings.

TABLE 6

Effect of selection of days for observation on the average record of daily intake of certain groups of foods for 63 rural Iowa children

DAY OR GROUP OF DAYS	AVERAGE SERVINGS PER DAY			
	Milk*	Meat, poultry, fish, etc.	Green and yellow vegetables	Citrus fruits, tomatoes, etc.
Wednesday	2.9	1.3	0.89	0.64
Saturday	2.8	1.7	0.54	0.48
Sunday	2.1	1.6	0.83	0.69
Monday-Tuesday-Wednesday	2.9	1.3	0.70	0.65
Tuesday-Wednesday-Thursday	2.9	1.3	0.72	0.68
Wednesday-Thursday-Friday	2.9	1.5	0.93	0.65
Monday through Friday	2.9	1.4	0.71	0.67
Monday through Sunday	2.8	1.5	0.72	0.58

* Serving = 1 cup

To study further the variability of diets, a statistical analysis was made of the calculated protein and calcium and the caloric intakes as obtained in seven-day dietary records of another group of sixty-three Iowa children, comprising a random sample of a rural school with grades one to twelve.

The variability of the day-to-day nutrient intake was fairly large. The calcium content of the diets was significantly less on the week-ends than during the school week. Failure to include the week-end days in this sample would result in an overestimation of the calculated calcium and an underestimation of the calculated protein intakes of the children in this community. Trends similar to those observed in the diets of the rural Iowa children were noted among the city children; therefore, in this state it was decided to obtain seven-day dietary records for all children throughout the study. In making a decision regarding the number and selection of days to be used, facilities for collecting and calculating records must be considered.

Analysis of variance also was made of the calculated nutrients of seven-day records of approximately 150 of the nine-, ten-, and eleven-year-old children of Iowa. The nutrient intake was much more variable for girls than for boys; and for the girls it varied significantly from day to day for most nutrients. Analysis of data for the boys showed that beyond the variance due to sampling, the intakes of vitamin A, protein, thiamine, and calcium did not differ from day to day. However, in the data of both sexes, the greatest variability in intake was in vitamin A and ascorbic acid. This observation might have been predicted from the high day-to-day variability in the use of vegetables and fruits. For both sexes, thiamine was probably the only nutrient which could be estimated as well by the use of one day as another. One day's record may be expected to give as good an estimate of the usual intake of this substance as the average for the week.

Analyses of variance of the nutrient intake of individuals in well selected samples of the groups to be studied might result in a considerable reduction of the work to be done. There is probably no "rule of thumb" regarding the number of days which should be observed or the seasons which should be represented. Theoretically these are questions which should be decided after preliminary observations of the population involved. Possibly the sampling for the study of the food habits and nutrient intake of girls should be different from that for boys.

COLLECTING THE DIETARY DATA

The problem of obtaining a record which will represent the true intake of an individual is complicated. In mass studies, it seems impractical to ask that the subjects weigh the food eaten. A more plausible procedure is to record the foods in terms of servings or estimated household measures. To

TABLE 7

Comparison of average daily nutrient intake of 25 Iowa children calculated from estimated amounts or number of servings and from weights of servings

NUTRIENTS	CALCULATIONS BASED ON ESTIMATED SERVINGS		CALCULATIONS BASED ON WEIGHED SERVINGS		MEAN OF DIFFERENCE	T VALUE*
	Average	Standard deviation	Average	Standard deviation		
Calories	2173	487	1957	523	−216	2.37
Protein (gm.)	69	20	63	20	−6	2.51
Fat (gm.)	94	24	82	21	−12	3.41
Carbohydrate (gm.)	254	63	246	75	−8	0.77
Calcium (mg.)	1082	402	972	349	−110	2.56
Vitamin A (I.U.)	6998	4673	6007	3703	−991	2.63
Thiamine (mg.)	1.24	0.28	1.16	0.26	−0.08	1.40
Riboflavin (mg.)	1.97	0.83	1.80	0.66	−0.17	2.18
Ascorbic acid (mg.)	87	51	80	39	−7	1.57

* At 1% level, t = 2.797; at 5% level, t = 2.064

evaluate the differences between results obtained when records are kept in the two ways by mothers of school children, a study was set up with twenty-five children. The mothers recorded the foods used during one day in estimated servings and household measures, and then weighed the same foods on gram scales. The nutrients of the daily dietary records were calculated and compared (Table 7). For each nutrient the standard deviation was large regardless of method of keeping the record. With calories and each of the nutrients studied, the mean of the nutrient intakes as calculated from estimated diets exceeded the mean as calculated from the weighed diets. The differences of the means for fats were significant at the 1 per cent level; for calories, protein, calcium, vitamin A, and riboflavin, at the 5 per cent level. Differences for carbohydrate, thiamine, and ascorbic acid were not significant.

Scatter diagrams indicated that the calculated nutrients from the two types of records were correlated. When records are being kept by untrained people, it is probably as satisfactory to obtain the information on the food items by servings as by weighed amounts, but in the interpretation, it is well to remember that the results obtained from the former procedure are likely to be somewhat higher than those obtained by the latter.

In another study designed to compare the results when records of the same day's diet were kept by the mother and by the child, there was no significant difference in the final evaluation in terms of food groups. Records kept by mothers and sons, however, agreed more closely than records kept by mothers and daughters.

Further evidence that the dietary record in terms of estimated servings and household measures is a satisfactory means of collecting these data may be obtained by comparison of the calculated ascorbic acid content of the diet with the blood ascorbic acid concentration, which is known to reflect the intake of this nutrient. In the sample of sixty-three children from a rural Iowa school, a logarithmic relationship was shown between these two factors. The actual correlation was 0.5, which was significant at the 1 per cent level. Establishing a high relationship between a dietary component and a related blood measurement would seem to validate the procedures.

TABLE 8

Range in size of serving as estimated by nutritionists in three states

FOOD	SIZE OF SERVING *gm.*
Ham	85–100
Vegetables	80–100
Fruit juices	100–110
Waffles	60–126
Jelly	10– 20
Cocoa	166–180
Navy beans	40–100
Cabbage slaw	30– 50
Macaroni and cheese	110–220
Spaghetti and meat	112–178
Hamburger patty	33– 85
Scrambled eggs	50–106
Milk (1 glass)	220–240

INTERPRETING THE SIZE OF SERVINGS

The problem of interpreting the size of servings has been studied from several viewpoints. The size of servings of sixty common foods appearing on the menus of the nine-, ten-, eleven-year-old children was independently estimated by the nutritionists in the three cooperating states. These estimates were made as a result of observations of various types, including observations made of the amount of food eaten in school lunchrooms by children of different ages. Close agreement existed in the estimates for a majority of the foods. The greatest differences are shown in Table 8.

For many foods, such as bread, potatoes, breakfast cereals, butter, sugar, salads, the estimates from

TABLE 9

Actual weights of the servings of a few foods as used by several children

FOOD	RANGE OF SERVING SIZE	AVERAGE SERVING SIZE	AGE OF CHILDREN
	gm.	*gm.*	*yr.*
Bread, 1 slice	14– 40	25	all ages
Milk, 1 glass	165–252	220	all ages
Milk, 1 cup	102–222	150	all ages
Orange juice, 1 glass	60–138	110	9–11
Meat, cooked	26– 42	35	6– 8
Meat, cooked	29– 90	51	9–11

the three sources were almost identical. The wide variations in size of serving, as observed in Navy beans, macaroni and cheese, spaghetti and meat, and scrambled eggs, may have been due to actual lack of standardization of serving sizes in schools rather than to simple errors of judgment. For a few foods which appeared most frequently on children's dietaries, the food eaten by a number of children at home was measured and weighed in order to arrive at a more accurate estimation of the serving size (Table 9).

Since the intake of milk, probably more than that of any other food, affects the nutritive quality of the diet, it is most important to obtain a good estimate of the amount used. Fortunately, it is about the easiest of all foods to judge quantitatively, and its composition with respect to most nutrients does not vary greatly. The amount may be actually measured. If this is impossible, the nutritionist may observe the glass commonly used for the child and determine its capacity. The actual intake from the 8 oz. glass is likely to be about 220 gm., or about 8 per cent less than the glass would contain if filled completely to the top. This difference, three or four times a day, can be reflected in the nutrients estimated for the day's diets. Of all foods, the intake of milk at school is probably the best standardized, since the common practice is to serve the half-pint bottle.

SUMMARY

Data obtained as described will reveal much information concerning the food habits of large groups of children. The kinds of foods eaten, the distribution of foods among meals, and the estimated intake of nutrients will be shown by such studies. The results obtained are more accurate in describing groups than individuals. The nutrient intake seems more likely to be overestimated than underestimated, but for individuals, it correlates well with results obtained from records in which foods eaten have been weighed.

Any one combination of three days during the week may represent the week-day intake as accurately as another, but week-end food habits are likely to differ significantly from those of the five school days. The day-to-day use of fruits and vegetables may be more variable than that of meats, cereals, and milk. The intakes of vitamin A and ascorbic acid are likely to be more variable than those of other nutrients. The nutrient intake of girls is more variable than that of boys. The probability of seasonal influences in nutrient intake, particularly of ascorbic acid, must be remembered in interpreting data.

In initiating extensive dietary studies, careful consideration should be given to the apparent characteristics of the population involved. Preliminary investigations of subsamples may help to increase the accuracy of the results and to reduce the amount of work to be done.

These studies have emphasized the need of interpreting data from dietary records in a variety of ways in order to get a true picture of the food habits of a group of children.

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B-Complex Vitamins in Meat

III. Influence of Storage Temperature and Time on the Vitamins in Pork Muscle[1]

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BECAUSE of the importance of meat as a source of essential nutrients, methods of preservation have long been investigated. At present, one of the most acceptable is freezing. However, the temperature and the length of storage may alter the vitamin content of the meat, thereby changing its nutritive value. The experiments reported in this paper deal with the changes in vitamin content of pork muscle after storage at different temperatures and for different storage periods.

A review of the literature revealed little data dealing directly with these problems. Gortner *et al.* (1) stored pork roasts for 0, 4, 8, and 12 months at 0°, 10°F., and fluctuating temperatures between 0° and 20°F. They reported that the thiamine content was not altered significantly during storage, regardless of the experimental conditions, but that the development of rancidity in the fat was quite marked on long storage and at temperatures above 0°. Hall and co-workers (2) found that pork stored at −10° and −20°F. was more palatable, had fewer peroxides, and a lower content of fatty acids than samples stored at higher temperatures.

METHOD OF PROCEDURE

Two experiments were conducted. In the first, the pork loins from nine hogs raised under the same conditions and of approximately the same weight were cut to give three pairs of loins per animal. One cut from each animal was used for analysis immediately, while the other cuts were weighed, double wrapped in freezer locker paper, and frozen at approximately −35°F. After freezing, one-third of the loins was stored at 10°F., one-third at 0°F., and one-third at −10°F.

At the end of the storage periods of 12, 24, 40, 56, and 72 weeks respectively, the loins were removed from storage and divided in half. One-half was roasted in a 350°F. oven to an internal temperature of 185°F. These results will be reported later.

The other half was used for the raw sample. The longissimus dorsi muscle was removed from each sample and ground three times in an electric food grinder. The samples of fresh meat were frozen overnight in order to equalize any changes due primarily to freezing. The meat was thawed, mixed thoroughly, and samples taken for analysis.

In the second experiment the same method was followed except that the meat was stored at 0°, −10°, and −20°F. for 12, 24, 36, and 48 weeks and at 0° and −10°F. for 60 and 72 weeks.

Fat and moisture determinations were made on all samples in order to report the vitamin content of the meat on a dry, fat-free basis, thus making the data more comparable. The moisture was determined by the method recommended for the Cooperative Meat Investigations (3), and the fat according to the method of the Association of Official Agricultural Chemists (4). The thiochrome procedure of Hennessy (5) was used to determine thiamine; the fluorometric method of Peterson, Brady, and Shaw (6) for riboflavin; and the microbiologic methods of Strong, Feeney, and Earle (7) and Krehl, Strong, and Elvehjem (8) were used for pantothenic acid and niacin.

RESULTS AND DISCUSSION

Experiment I

The percentage retention of thiamine, pantothenic acid, and niacin after frozen storage at 10°, 0°, and

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TABLE 1

*Experiment I—percentage retention of vitamins in pork loins after frozen storage**

ANIMAL	STORAGE TEMPERATURE	THIAMINE RETENTION	PANTOTHENIC ACID RETENTION	NIACIN RETENTION
	12 Weeks' Storage			
	°F.	%	%	%
7	10	73.0	60.6	89.0
8	10	88.3	78.3	128.0
9	10	100.8	73.8	93.5
7	0	67.7	78.9	101.0
8	0	83.5	84.4	116.9
9	0	94.4	85.7	93.4
7	−10	72.5	61.2	92.9
8	−10	98.3	73.8	137.6
9	−10	93.9	79.3	96.0
	24 Weeks' Storage			
4	10	99.8	118.1	106.8
5	10	101.8	107.6	89.1
6	10	102.9	85.6	84.9
7	0	72.9	71.3	80.5
8	0	98.4	84.1	152.6
9	0	86.4	65.6	89.7
7	−10	82.3	60.9	91.4
8	−10	113.2	85.3	128.8
9	−10	86.3	84.2	109.3
	40 Weeks' Storage			
4	10	114.2	83.3	117.7
5	10	101.0	80.4	98.8
6	10	88.9	65.5	96.0
4	0	114.7	69.0	97.3
5	0	102.5	68.6	95.3
6	0	116.5	84.2	91.1
4	−10	94.1	77.5	108.1
5	−10	103.9	80.9	96.4
6	−10	105.7	76.5	93.9
	56 Weeks' Storage			
1	10	60.7	128.2	98.9
2	10	80.2	125.7	95.3
3	10	69.7	103.0	124.7
1	0	95.6	112.7	98.3
2	0	84.6	74.4	97.4
3	0	91.2	61.7	126.1
4	−10	106.0	88.7	102.4
5	−10	106.6	89.1	92.6
6	−10	103.0	109.0	88.9
	72 Weeks' Storage			
1	10	73.8	167.7	101.2
2	10	95.4	137.6	76.8
3	10	107.0	123.4	91.7
1	0	77.3	180.3	93.3
2	0	89.5	128.1	83.1
3	0	72.4	124.6	102.1
1	−10	91.9	143.3	96.3
2	−10	88.4	108.3	82.8
3	−10	86.3	112.2	112.2

* Data calculated on a dry, fat-free basis.

−10°F. for 12, 24, 40, 56, and 72 weeks is shown in Table 1. On the whole, the thiamine retention was good. The analysis of variance indicated that the temperature and length of time of storage were not significant for this vitamin. It should be pointed out, however, that there was some interaction between storage temperatures and length of time of storage which was significant at the 5 per cent level (Table 2). The greatest loss of thiamine occurred among those samples stored at 10°F. for 56 weeks, which showed an average loss of 30 per cent.

TABLE 2

Analysis of variance of figures in Table 1

SOURCE OF VARIATION	DEGREES OF FREEDOM	MEAN SQUARE		
		Thiamine	Pantothenic acid	Niacin
Storage temperature	2	143.32	807.65	23.08
Length of storage	4	535.24	5767.27†	207.40
Storage temperature × length of storage	8	305.75*	417.99	122.66
Animals	30	117.89	253.29	300.33
Total	44			

* Significant at 5% level.
† Significant at 1% level.

As shown in Table 1, the range in the retention of pantothenic acid was considerable and the analysis of variance indicated that storage temperatures were not significant. The length of storage showed no significant trends as to losses of this vitamin, but there was a significant increase in those samples stored for 72 weeks at all three temperatures. Kiermeier (9) has shown that enzymes retain their activity during the freezing process and in the frozen state as long as liquids are present and as long as the gradually increasing concentrations of inhibiting substances do not interfere. Whether enzyme action

TABLE 3

*Experiment II—percentage retention of vitamins in pork loins after frozen storage**

ANIMAL	STORAGE TEMPERATURE	THIAMINE RETENTION	RIBOFLAVIN RETENTION	PANTOTHENIC ACID RETENTION	NIACIN RETENTION
12 Weeks' Storage					
	°F.	%	%	%	%
7	0	108.1	116.2	110.4	106.1
8	0	92.2	98.6	103.9	92.6
9	0	94.9	122.3	96.4	118.9
7	−10	134.5	86.7	80.4	128.7
8	−10	85.2	64.8	76.0	105.3
9	−10	103.9	100.5	78.3	161.2
7	−20	127.2	92.7	74.0	130.8
8	−20	76.8	67.2	71.5	100.3
9	−20	85.4	81.2	75.9	182.0
24 Weeks' Storage					
7	0	88.4	111.3	118.6	115.1
8	0	68.1	75.8	98.5	101.2
9	0	75.9	112.6	111.3	166.6
7	−10	105.0	93.5	90.4	133.5
8	−10	77.6	66.1	80.8	92.1
9	−10	92.0	106.2	103.0	139.8
7	−20	108.0	78.6	80.1	135.7
8	−20	61.0	67.4	77.2	97.7
9	−20	95.3	104.4	89.8	166.7
36 Weeks' Storage					
4	0	75.0	123.2	119.4	93.1
5	0	89.6	78.3	104.3	86.9
6	0	65.8	124.0	107.5	92.2
4	−10	71.0	92.9	90.7	95.9
5	−10	82.8	57.6	79.7	96.7
6	−10	53.7	106.1	89.9	79.1
4	−20	67.2	116.4	93.4	106.3
5	−20	73.7	63.4	73.7	86.5
6	−20	55.8	121.0	96.8	112.1
48 Weeks' Storage					
4	0	68.1	102.0	105.4	80.6
5	0	101.4	80.2	103.2	82.5
6	0	76.9	114.2	87.7	92.1
4	−10	103.2	95.7	91.7	86.2
5	−10	94.5	57.6	68.2	79.6
6	−10	68.3	103.4	95.8	89.2
4	−20	106.7	108.4	97.1	100.3
5	−20	76.1	59.5	84.5	95.7
6	−20	64.1	118.6	99.9	97.3

* Data calculated on a dry, fat-free basis.

TABLE 3—*Continued*

ANIMAL	STORAGE TEMPERATURE	THIAMINE RETENTION	RIBOFLAVIN RETENTION	PANTOTHENIC ACID RETENTION	NIACIN RETENTION
60 Weeks' Storage					
	°F.	%	%	%	%
1	0	113.4	131.0	128.3	120.1
2	0	88.3	127.8	124.9	116.2
3	0	61.9	174.5	131.8	124.2
1	−10	73.2	110.7	116.3	134.1
2	−10	115.7	118.8	124.5	121.9
3	−10	79.3	111.1	105.8	127.7
72 Weeks' Storage					
1	0	79.1	122.3	117.4	89.8
2	0	85.2	137.3	129.9	84.0
3	0	72.3	141.8	142.2	82.3
1	−10	110.1	122.5	101.7	104.1
2	−10	95.6	133.0	125.7	84.8
3	−10	68.2	135.1	101.7	101.6

progressing slowly over the longer storage period converted the precursors into the vitamin is not known, but it could be a possibility.

The losses of niacin, as shown in Table 1, were small. The different storage temperatures and the length of the storage period had little effect upon the retention of this vitamin. The analysis of variance also indicated that these factors had no significant effect.

Experiment II

In the second experiment, the meat was stored at 0°, −10°, and −20°F. for 12, 24, 36, and 48 weeks and at 0° and −10°F. for 60 and 72 weeks. The percentage retention of thiamine, riboflavin, pantothenic acid, and niacin after frozen storage is given in Table 3. It may be noted that the animal variation was considerable. The analysis of variance (Table 4) indicated that the storage temperature had no significant effect upon the thiamine content. The data for four storage periods at the three different temperatures did show that the length of storage was significant at the 5 per cent level. An analysis of mean showed a greater retention of thiamine during the 12 weeks' storage period than after longer storage. Analysis of variance for all six storage periods at 0° and −10°F. indicated no significant effects due to temperatures or length of storage.

The temperature and length of storage had little effect upon the riboflavin content of the pork. In most cases, the percentage retention was high. An analysis of variance (Table 4) on the data obtained from samples stored for 12, 24, 36, and 48 weeks at three different storage temperatures showed no significant effects of temperatures and length of storage.

TABLE 4

Analyses of variance of figures in Table 3

SOURCE OF VARIATION	DEGREES OF FREEDOM	MEAN SQUARES			
		Thiamine	Riboflavin	Pantothenic acid	Niacin
Analysis for 12, 24, 36, and 48 Weeks' Storage at 3 Temperatures					
Storage temperature	2	140.485	1200.57	1699.96‡	730.575
Length of storage	3	1390.283*	92.55	184.68	3629.64†
Storage temperature × length of storage	6	137.785	160.30	105.78	170.53
Animals	24	321.102	507.37	80.70	506.35
Total	35				
Analysis for All 6 Storage Periods at 0° and −10° F.					
Storage temperature	1	331.24	3045.20†	3220.56‡	380.25
Length of storage	5	565.26	2001.24	1113.41‡	2083.35‡
Storage temperature × length of storage	5	97.37	171.78	39.61	192.28
Animals	24	304.69	366.15	95.23	264.22
Total	35				

* Significant at 5% level.
† Significant at 1% level.
‡ Significant at 0.1% level.

An analysis of variance for all six storage periods at 0° and −10°F. indicated that storage temperature was significant at the 1 per cent level, but the analysis of mean showed the average percentage retention was high at both temperatures. Samples stored for 60 and 72 weeks showed considerable increase in riboflavin content.

The percentage retention and the analysis of variance for pantothenic acid are shown in Tables 3 and 4. In many cases, the loss of this vitamin was small. The storage temperatures appear to have been significant at the 0.1 per cent level as indicated by the analysis of variance. The samples stored at 0° showed an increase in pantothenic acid in most instances. The loins stored for 60 and 72 weeks showed an increase in this vitamin at both temperatures. These results were similar to those of the first experiment after 72 weeks' storage.

The losses of niacin were small as in the first experiment. The analysis of variance did show that the length of storage had a significant effect at the 0.1 per cent level, and the analysis of mean indicated significant increases in the niacin content in the samples stored for 12 and 24 weeks. The length of storage and the temperatures studied did not affect the percentage retention of this vitamin to any great extent.

SUMMARY

Two experiments have been conducted to determine the changes in the vitamin content of pork muscle after storage at different temperatures and for different periods. For the first experiment, the percentage retention of thiamine, pantothenic acid, and niacin in raw pork loins after storage at 10°, 0°, and −10°F. for 12, 24, 40, 56, and 72 weeks is reported. For the second experiment, the percentage retention of thiamine, riboflavin, pantothenic acid, and niacin after storage of pork loins at 0°, −10°, and −20°F. for 12, 24, 36, and 48 weeks and at 0° and −10°F. for 60 and 72 weeks is reported. A statistical analysis of variance is given for all the data.

The data show considerable animal variation in the vitamin content of the different samples. No outstanding losses of any of the vitamins studied could be attributed to storage time or temperature.

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Early Spanish explorers in the sixteenth century called coconut "the grinning face" and insisted it had eyes.

Editorial

OF CABBAGES AND KINGS

It is a pleasure to have this opportunity to greet the members of The American Dietetic Association. The work of the past year reported at the 34th Annual Meeting was an impressive record of the activities of the members of the state associations, the Co-ordinating Cabinet, the staff of the Chicago office, and the leadership of the retiring President. We can be justly proud but not complacent. It is axiomatic that an organism grows or regresses but does not stand still. The growth of The American Dietetic Association during the past ten years has been notable. With growth has come both increasing opportunity and responsibility. It is pertinent to take time to evaluate the position both of the Association and of the individual dietitian.

SHORTAGES OF DIETITIANS

There never is one reason for shortages or surpluses, whether they be in agricultural products or dietitians. Perhaps the factor which has produced the greatest strain on our profession is the tremendous increase in demand which has greatly exceeded what might be considered a normal and satisfactory rate of growth of a profession. The Association has more than doubled its membership in ten years. The demand is measured by the large number of openings listed in the Placement Bureau and the small number of active applicants for those openings. The demand is not only for dietitians in hospitals, who in former years did not accept a dietitian as a valuable investment, but for persons trained in dietetics for many other positions in schools, in business, and in community organizations.

The increased demand is recognition that the dietitian has an established place in many settings and, incidentally, is an endorsement of the rigorous training program which has been defined. This poses an interesting problem in recruitment. Hard work and personal sacrifice as a means of obtaining satisfaction in living have not been presented to young people as a desirable goal. Changing educational emphasis in the colleges has caused some persons to criticize the Association for being unduly demanding in its educational requirements and to suggest that students reject a training which is demanding. Is this a valid point of view or an expression of defeatism? Rosemond Tuve, in her report on the Fellows sponsored by the American Association of University Women, says: "Talk to the young people you know as if every human being were capable of passionate devotion to some thing bigger than himself . . . have the courage to emphasize the austere side of study. We vastly underestimate the austerity young people will embrace if they see that they are needed and that disciplined knowledge in any area is so valuable, and society so stuck for decent workers that every ounce of responsible and well trained strength they can put behind some wheel is desperately needed. Ask them to take more responsibility than you think they can take: they will rise to meet it."[1]

It is both the right and obligation of a profession to shape its own policies of training, work program, and ethics. It is also the obligation of a professional organization to define long-term goals and to distinguish between such goals and expediency. These are rights possible only in a free society and are to be cherished.

The American Dietetic Association has spent more than thirty years establishing itself as a member of the professions which assume responsibility for the public health. We have had the courage to define our requirements for membership in the profession and to set up a year of internship which means five years of training beyond high school where many similar professions open to women require only three or four years of post-high-school training.

We depend on the colleges and universities for our trainees for the internship which gives us a stake in the college program also. We cannot afford to ignore the trends in education in our colleges and universities—or to follow blindly an educational leadership which we have not examined thoroughly for its usefulness to us in the development of a professional person. Let us in the future, as we have in the past, assume the leadership for describing the training which we believe to be necessary and good for the advancement of the profession and to be vocal in telling both the colleges and prospective students why we believe such training is needed. We can sell dietetics to prospective students as a position of challenge with a future—if we believe in it.

NEED FOR CONTINUING EDUCATION FOR DIETITIANS

The person who is successful in a position of leadership does not close his mind to education upon graduation from college or the completion of the internship. A careful study of the tables presented in the 1949 report on the *Economic Status of Dietitians*

[1] TUVE, R.: A.A.U.W. Fellows and their survival. J. Am. A. Univ. Women 44: 201, 1951.

brings out the fact that the poorest salaries received by dietitians are found in the age group who have practiced their profession for from five to ten years.[2] Advancement in salary as well as in responsibility is an outgrowth of accomplishment on the job. The ability to visualize and build a program for an organization is measured by maturity, in other words, growing on the job. The lag in advancement for many members in the five-to-ten-year-experience bracket may measure a failure to bridge the gap between a student and a seasoned executive.

A recent master's thesis[3] points out that the greatest loss of active dietitians to marriage occurs after about five years of experience. The natural and desirable preoccupation with the prospects of marriage mean that many young women are not receptive to suggestions for continuing educational programs during their first few working years.

As an Association, we should be ready to help such young women grow at the time when they first become dissatisfied with their failure to advance. This suggests various continuing educational programs, such as better state meetings, workshops, and scholarship assistance for advanced study. Much is being done in the states at this time, but there still are many opportunities for the state associations to take the initiative in encouraging members to continue to learn.

A number of the state groups, as well as the national association, have created loan funds available at nominal interest rates for financing the year of internship or graduate study. The Association now has a fund of over $9000, only a third of which is on loan. The interest from the Life Membership Fund, totaling over $1000 a year, is added to this fund. No qualified person requesting a loan has been refused in recent years. Should we continue to build a loan fund which is inactive, or would it be wiser to invest this interest yearly and earmark the interest on this investment for a scholarship to be awarded after a certain amount has been earned?

ASSOCIATION GROWTH AND FUTURE PROBLEMS

The growth and organization of the Co-ordinating Cabinet and the House of Delegates has been gratifying and can be measured in a real increase in membership participation. More than 50 per cent of the membership voted for national officers in the last election. Some professional societies consider a 1 per cent vote a good measure of membership interest. However, with the present need for dietitians, we cannot afford 50 per cent inactivity—the problem is how to salvage that 50 per cent.

Certain state groups have sponsored the formation of local dietetic associations. The number of such associations has grown enormously during the past year. There are now eighty-eight. These are autonomous groups which are not affiliated with either the state or the national association. They undoubtedly fill a felt need for closer contacts among dietitians. They also raise some practical questions concerning interrelationships which suggest a need to study these local organizations and perhaps develop standards for their development.

The American Dietetic Association has and is strengthening and consolidating its position as a leader among the health professions. For the first time this year, we were invited to participate in the educational exhibits at the Annual Meeting of the American Medical Association. The enthusiasm with which our "show" was received is a measure of both the maturity of thinking that went into the development of the exhibit and the need which an allied profession is willing to let us fill. Have we taken the leadership that we should in other areas? Since 1945, there has been an epidemic of pseudo-nutritionists who have become wealthy at the expense of the public. Their success might be less spectacular if the public had not felt unsatisfied needs for nutritional information.

Nutrition today is recognized as a world problem. We are the largest and most powerful national group of organized dietitians, and people from many other countries are looking to us for leadership. Several hundred women from other countries are studying nutrition in the United States this year and will inevitably become familiar with us and our organization. Recently we have received an invitation to join in an International Dietetic Association. Although the Executive Board questions the wisdom of such an organization at this time, it is hoped that the Association will face the responsibility for leadership among dietitians of other lands, which our position demands.

The profession of dietetics has come a long way since the handful of leaders met in Cleveland in 1917. Our strength lies in a membership who are trained, alert, interested, and ready to work for their profession—let us keep that strength.

—Margaret A. Ohlson, Ph.D., President of The American Dietetic Association.

[2] BUREAU OF LABOR STATISTICS, U. S. DEPT. OF LABOR: Economic Status of Dietitians, 1949. Chicago: Am. Dietet. Assn., 1950.

[3] KELLER, V. L.: The Study of the Employment of Graduates of Approved Dietetic Training Courses, 1944–1948. Master's thesis, University of Washington, Seattle.

Food is part of Chinese lore, being incorporated in a number of proverbs. One, which is usually uttered by merchants on opening their stores in the morning, is especially interesting. Freely translated, it goes: "Another day begins for the seven necessities—firewood, oil, salt, sauce, vinegar, tea, and rice."

Current Comment

HOW ARE YOUR PERSONAL PUBLIC RELATIONS?[1]

JEAN WADE RINDLAUB

Batten, Barton, Durstine and Osborn, Inc., New York City

It is only fair to tell you, I think, that I write advertising for a living. In the process, I do a lot of talking about what the years have done to my field—the new media like television and movies; blimps in the sky; the new and better methods of research; less guesswork; more legwork; door-to-door work; more and better coordination of advertising and sales and promotion problems; more, much more, service; a greater recognition of social responsibility. These are things I talk about. But I do a lot more thinking about another part of the story. I like to think about the "little woman"—in advertising, in business, in home economics, in dietetics. How's she doing? Is she growing—growing big enough to do a bigger job? growing in her head? growing in her heart? I think she is. I think many of the older women I know today are bigger women than some I knew twenty years ago. I think today's crop of younger women show they've come up in good growing weather. I was delighted to read in *Fortune* that the consensus of American businessmen is that even *wives* are doing a better job these days. And that is why I like the title, "Winning Friends for Your Profession" or, as I like to put it, "Your Personal Public Relations Program." I think it is important to put not necessarily your best foot but your *true* foot forward. I think your business friends should know you as you really are.

I think a plan for your personal public relations program could well start with the decision—to *be* or *not* to *be*! It's so easy *not* to be—just to "jellyfish" along doing our work in a "sure it's got to be done" frame of mind, accepting things that happen to us after a fashion, thinking what gay and exciting and creative and unusual lives we could live if only we were somewhere else or doing something else or looking like somebody else or earning somebody else's paycheck. Most of us—and I'm right in here with you—spend a terrific amount of time in *not being.*

You've heard the story about the workman who opened his lunchbox on Monday, looked hopefully at its contents, peered inside a sandwich, shook his head, and muttered "Peanutta butter. Phooey. Peanutta butter." Tuesday noon he did it again—opened his lunchbox, peered inside, looked hopefully at a sandwich, shook his head sadly, "Peanutta butter." Wednesday noon, the man at the next bench was watching—same performance, same sandwich, same sad headshake. "Phooey, all tima da peanutta butter." "Why doesn't your wife give you another kind?" asked the neighbor. The man looked up sadly. "No got wife. Maka my own san'!" It's only too true. Every day in every way, in every gesture, every word, every brief encounter, friendly or unfriendly, in everything you do, you are making your own "san'."

I'd like to talk a little about your personal decision to *be*—to make your own "san'"—and what, having made that decision, you might conceivably do about it.

Working in a professional group like The American Dietetic Association could be one way, I think, because the woman who decides to *be*—to be more of a person in her job, in her community, in her professional field—might well decide that there is stimulation in numbers, there is challenge in rubbing elbows with other imaginative, creative people.

You might decide—and I think you would be right—that The American Dietetic Association could help you to be more of a person, to live your life to the full, only if you put something of yourself into it, if you consider what you can give before you ask what can you get, if you decide that here is a place to share some of the things your business life has taught you and have them come back to you in good measure, pressed down and running over. I think that a professional group, like any other organization in these busy days, must make the positive decision to *be* or *not* to *be*, too—to *be* something more than a mere exchange of pleasant nothings, to be a meeting place where it may be possible to see your job in perspective, to study your work in its relation to industry as a whole, to re-evaluate your small part in it.

I think that the group that provides sufficient challenging, creative, exciting, definitive, interpretive programs and projects in its own business field will never lack for members. It is when we go off the deep end and decide that our people will only come out to see movie stars or to be entertained that we are apt to fall apart at the seams. It is when we use our business relationships only for the rather sordid business of back-scratching—you know, you scratch my back, I'll scratch yours—that we are surprised

[1] Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland, on October 10, 1951.

to find the whole thing a little dusty. It's when we really think—intelligently, creatively, responsibly—about our group's relation to our profession and to the community and what it can contribute that we find it a vital and alive and necessary part of our individual lives.

And so I think you should make your decision to join the Association (or any other organization) or to work on its committees or its projects carefully as a part of a larger pattern—the pattern you put down on paper or write on the tablets of your heart as your decision—"I'm the girl who is determined to *be*!"

BEING IS SEEING

The first step in a program of *being* could well bear considerable relationship to the first step in any program of public relations or advertising. You might call it the survey step—the look-the-ground-over step, the *look-at-yourself* phase. Being is *seeing*. You'll want to sit down and take a square look—a look at your job and a look at yourself. Ask yourself some questions. See yourself and your job in perspective. Ask yourself: What is my work? What is its relation to my company's activities? Am I planning meals—or restoring sick people to health—or building children into better citizens? Am I part of my organization—a heart-and-soul part—or do I stand on the sidelines and criticize? Ask questions like that. Look yourself up—see what you find.

You have asked yourself, haven't you, "What is my job? What is its relation to the other positions in my company? What is my company's relation to the community? What service does it render? What people need it? Does it supply all their needs? What are my personal job relationships? What is my basic contribution to my work? What could I do to deepen, to strengthen it, to humanize it? What could I give?"—not "what could I get?" The older you grow, the more you know that the way to get something out of any piece of work is to think about what you are putting into it, to think about your work in its relation to your organization's work as a whole, to think about your organization's success, to forget yourself.

Branch out in your questions. Make them more personal. Do I look my best? What could I do to improve my appearance? Do I talk too much? Do I get to work on time—not just once in a while but all the time? Am I on time for meetings? Do I carry my own pencil and paper? Do I use them—invariably—and not take a chance on my memory? Do I listen, really listen? Can I be trusted—not just occasionally but every single time—to remember everything assigned to me? Am I comfortable to be with? Men—and women, too—like women they can be comfortable with. Someone used to say, "Older women, from the middle twenties, should be retiring and gentle and harmless, so that employers will find them easy to have around." Am I overcritical? Is there something I could do about that? Do I do more than I am asked? Do I do it with a smile? All these are little things. Everybody knows them. Everybody does them. Or do they? Do you really take on extra jobs or new work cheerfully without grumbling or stopping to talk about all the other work you have? Could you start to build up, not tear down, talk less and think more, complain less and compliment more, frown less and smile more?

I read in a newspaper recently that single women seldom smile, so they remain spinsters. A psychologist at Arkansas A & M College compared 104 traits of 176 wives and 176 unmarried women. He found both groups about equal in beauty, intelligence, and enjoyment of housekeeping. But the unmarried group seldom smile. They are unhappy, self-centered, faultfinding. They want to have their own way. A smile is a handy thing to have around the house.

BEING IS LOVING

That leads naturally to a second step. Being is *loving*—you could "warm yourself up." It's a big world, a lonesome one, and it saves its best rewards for warm, friendly, likable, human, understanding people—people who are not afraid to smile, who never let their professional dignity hide their own warm, friendly personalities. In our business we learn by surveys, by readership studies, by all sorts of research, that it is the simple things—the warm, human, friendly things, the things people understand, the things that are close to their hearts—that are the effective things. True as this is in preparing advertising, it is even truer in our personal relations with our employers, with our associates, with our employees, with our public.

"I like little dogs," my daughter said gravely one day on Park Avenue, "but I don't like the ladies who own the little dogs. When you smile at their little dogs, they don't smile back." Don't be like that. Warm yourself up! It is possible, by working at it, to add simple human bits of the real you to your plans, to your speeches, to your reports. It is possible to use the daily opportunities you have to build bridges from your little lonely world to another little lonely world—and that, after all, may be what life is all about.

BEING IS GROWING

The next in my five-step program is *growing*. A man I know puts it simply, "It isn't up to management to grow its people up."

That's something every man, every woman, must do for himself. Grow yourself up by acquiring good, mature working habits: the habit of *cheerfulness*—life is too short for grumpy people; the habit of *expecting change*—nothing is static, nothing stays

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put. Get into the habit of expecting today's griefs to be balanced by tomorrow's joys, today's satisfactions to dissolve into tomorrow's mishaps, know that it's a changing world, and your small part in it, too, is sure to change. Along with that, form the habit of *bouncing back*. Everybody goes down, now and then. Your pet plans fail. Your pet dreams vanish. But it's the good people, the strong people, who use every bump as a take-off for the bounce back. Learn the habit of *adapting*—borrowing a good idea from one field to use in another.

I heard a story the other day about the Chrysler engineers. They went to the Mayo Clinic for a serious costly consultation. "Tell us," said the engineers to the doctors, "how the human body works. How do the joints function? How do bones move in their sockets? How are they lubricated? How are they fastened?" Out of that research, that adaptation, if you will, grew knee-action wheel suspension and a half dozen other engineering design improvements. In your reading, in your listening, in your talking to people, how many ideas do you pick up? How many do you adapt?

Learn the habit of *relaxing*—of putting up a good appearance of taking life in your stride. We women in business, professional women are a minority group. As such, sometimes we seem to press! Let's relax!!!

BEING IS THINKING

Next on my list, is: being is *thinking*. I really care about this one. It may seem elemental. If it does, remember the story of the young girl at the perfume counter. She read all the names—Passion's Night, Saints and Sinners, Cobra, Dynamite. And then she asked a little hesitantly, "Don't you have something for beginners?" I'd like to talk to beginners about the techniques of *thinking* yourself *up*—creative thinking! We try what we call "brainstorming." We sit around a table with a problem and think up ideas to solve it!—nothing but ideas. No one is permitted to say, "But that won't work," or "Dr. X proved that theory false"—no comments, no judgment, no critical thinking. We just put the problem on the table in a couple of crisp sentences and then think up an idea, jot it down, and go on to another. A. F. Osborn of BBD & O (the common designation for our organization) has described this process in the book called *Your Creative Power* (1).

Let me show you how simple it might be to put your own creative imagination to work on this business of how to improve your personal public relations program—or your pattern of *being*.

You take a piece of paper, you take a pencil, you take *you*. That's all you need. What could you do if you really cared to make your job this minute more fun? Think about people—the people you work with. What could you say, what could you think, what could you feel, what appreciative point of view could you develop about these people in the next 10 minutes? Did someone write a book, make a speech? Have you read it? Are you an appreciator—have you developed a capacity to recognize good work, to understand it? Were you a listener? Did you really hear the last three things people told you? Did you look as though you heard them—or were you too preoccupied with your own troubles? Are there new books in your field you could read—or new books in other fields, books of worlds that touch yours, books on other and more remote worlds—that would help you understand yours better? Is there a play that would broaden your horizons, a picture that would make you more vivid and alive? Are there growing things you could be doing? If you're afraid to start on your own life first, try it as a game. Take somebody else's life. See how many things you can write down that would make a certain associate's life more fun, that would make her easier to live with. Or get a group together and try it for each other.

What about your own personal public relations? How many people have you smiled at this week? How many people have you greeted with a genuinely warm "Good morning"? Have you asked about anybody's children? anybody's job? Have you listened to anybody's troubles? How often have you said, "You're wonderful"? That's a useful phrase: "You're wonderful." Do you use it? I know there isn't time to write letters, but have you found time to get a few written? There isn't time to see shows—but did you smile today when a kitten crossed your path? Did you look with warm appreciation at any one of the millions of small vignettes of life your doors reveal? Did you save up a story for someone? Did you laugh at yourself? That's a healthy exercise. Who said, "Women create most of their own troubles by taking themselves too seriously"? I can't write your public relations program, but I can tell you the tools you need: a pad of paper, a pencil, a listening ear, a willing heart.

We have been talking about your business life. But that's only half the story, perhaps the lesser half. Can you use these same techniques to enrich your private life? I think you can. I think all of us could do more thinking *up*. Ask yourself: "What were my goals when I was fifteen? Did I want a house, a husband, an education, a career? How many have I achieved? Have I found any new goals? Are they bigger, broader, more outreaching?" God doesn't lift people up by the scruff of the neck and force them to climb. Here's the world with its great opportunities to be wise and good, its terrifying opportunities to muddle along in the misty flats, not mattering much one way or the other. Here's your life—one short, fast-passing lifetime. The choices and decisions are up to you. Think yourself *up*—think for yourself: "What can I do this week, this day, this hour, this minute, to make my home brighter, my family happier, my friends stronger, my job more fun? What new goals has my life now?"

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Ask your supplier for plastic dinnerware identified by this insignia. It complies with the high standards of quality established for heavy-duty melamine dinnerware by industry through the U. S. Department of Commerce.

Use charts to check on yourself if you will. Today, this day, was I a good employer, a good employee, a good associate, a good sister, a good daughter, a good mother, a good wife, a good citizen? You know your life relationships—think up ways to make them happier. I never come out too well on these. It's like punching down dough—press here, it pops up there. The day you're a good citizen, you're not doing so well as a mother. The day you're a darling daughter, you fall down as an employee. But I still think it's a good target.

Another thing you can think *up* is how to make your life more fun. Start with friends. You go to shows with your contemporaries, but have you thought of borrowing a neighbor's child to take her to Peter Pan or the circus? See the world with fresh young eyes. You play canasta with people you know, but have you gone out of your way to meet and know a few DP's? You see many people of your own age group, but have you widened your horizons by deliberately trying to make friends in another generation?

Maybe friends are not your problem; maybe it's boredom. What could you do about that? You could sing a new song, read a new book, walk a new street, think a new thought. Variety is the spice of life. How's your spice cupboard? Ideas grow best in well-fed minds. How's your feeding program?

Life is more fun if you're *living* it, not just sitting on the sidelines. Life is more fun if you *accept* it—don't wait for another pattern, another framework to develop. Decide, "This is my life, this is my husband, these are my children, this is my town, this is my job. I will make my life more fun right here and now." Life is more fun if you *grow* in it—change your mind, revise your opinions. Life is more fun if you *love* it—open the windows of your heart.

It would be presumptuous to talk about how this technique of thinking yourself *up* applies to serious troubles. But this one thing I know: a serious trouble is not something that happens to any one person alone. Every life has its share of it. And it is possible even if sometimes it isn't easy to think your way *through*, to think your way *above*, to think your way *beyond* your troubles. Use your head—*think up*. It's more fun than bridge, more exciting than canasta, to think up your own answers, solve your own problems by yourself.

BEING IS BELIEVING

The last step in my five-step platform reminds me of a day we were making cookies, and I asked Anne to butter the baking sheets. "Mother," she said gravely, "I don't think I'd better do that. You see, my hands are clean enough for all ordinary purposes, but they always seem to turn the butter black." There are people like that. People who, by their cynicism, their lack of faith in themselves, in other people, in God, if you will, always seem to turn the butter black. So the fifth plank in my program of *being* is the most important of all—being is *believing*.

Find something to believe in, something bigger than you, something outside of you. Believe in your job—or get out of it. Believe in other women. You know the Chinese symbol for trouble—two women under one roof! It hasn't worked that way in my business life—and the older I get, the more I believe in women—in their friendliness, generosity, decency, and ability to take a lot of trouble in their stride without whimpering, in their courage and high purpose. Narrow it down to the women in your work, in your professional group. Believe in them, credit them with decent motives!

And then I think I'd believe in me. That isn't as funny as it sounds. It takes many of us a long time and a lot of kicking around before we come to realize that when we are up against a business problem, or for that matter a personal problem, our friends can stand by, our superiors can be patient, but nobody can solve that problem but *us*. You must learn sometime to dig down deep inside yourself and come up with some inner strength or spark. From time to time you hear people say, "There's no opportunity in my job. I've come to the end of the street." Yet here and there in the same organization, a few people are quietly going ahead, making their own future, writing their own raises, believing in themselves.

There never comes a time in a woman's life when it's too late to grow, to forget yesterday, to be bigger in spirit, bigger in breadth of mind and heart and soul, to throw away the little things, the little worries, the little meannesses, the little spites, to go out deliberately and find something bigger than herself in which to believe.

REFERENCE

(1) OSBORN, A. F.: Your Creative Power: How To Use Imagination. New York: C. Scribner's Sons, 1949.

Ion-Exchange Resins to Purify Radioactive Water

Decontamination of radioactive water to make it safe for drinking after an atomic attack may be possible through the use of chemical "traders," the ion-exchange resins, according to Dr. W. P. Utermohlen and M. E. Gilwood of the Permutit Company, New York, who presented a paper at the Diamond Jubilee Meeting of the American Chemical Society in New York in September.

After an atomic explosion, water may contain certain "hot" substances which can be removed by passing it through beds of synthetic resins, which would remove radioactive ions from the water and substitute harmless ions for them. The process has already been applied successfully during World War II in treating sea water to make it potable for emergency use by shipwreck victims or by fliers forced down at sea.

"You are old, Father William," the young man said,
"And your hair has become very white;
"And yet you incessantly stand on your head—
"Do you think, at your age, it is right?"

LEWIS CARROLL

Father William's antics might well stand as the symbol of good health and energy we all hope to promote in older people today, as medical science accumulates more and more valuable knowledge of geriatric nutrition.

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Book Reviews

Tomorrow's Horizon in Public Health. Transactions of the 1950 Conference of the Public Health Association of New York City. New York: Public Health Association of New York City, 1950. Paper. Pp. 109. Price $1.

This is a report of a one-day forum of the Public Health Association of New York City, held in January 1950. Eight different contributors indicated the many pathways leading to a future which promises many benefits both to the group and the individual. A plea is made throughout for recognition of the variety of causes and effects and their interrelationships in the prevention and treatment of disease. The sooner every professional member and every citizen understands this and his own contribution, the sooner will tomorrow's horizon be today's well-being.

Particularly valuable for the worker in nutrition are the talks by Dr. John E. Gordon, "The Newer Epidemiology," and "Tuberculosis in the Light of the New Epidemiology" by Dr. James E. Perkins. In fact, reading Dr. Gordon's article should precede the reading of the one chapter which deals specifically with nutrition—that by H. D. Kruse titled "Nutrition in the Light of the New Epidemiology." Dr. Kruse's thesis regarding nutrition brilliantly illustrates Dr. Gordon's "multiple causation" theory. All of these articles are well worth reading.

Dr. Kruse traces the development of our recent nutritional science from the recognition of the extreme deficiency states to the contributions made by the newer biochemistry. He then shows the importance of such factors as economics, geography, and age in relation to nutritional level and points out the disappointment felt by many when direct relationships between food intake and nutritional status are not always to be found in spite of such knowledge.

Dr. Kruse describes convincingly the need for more delicate and accurate measurements than we now have for judging nutrition in a population where malnutrition is largely of a chronic type, with or without acute manifestations. Deficiency states need to be regarded, he thinks, with three chief factors in mind—*speed* (acute or chronic), *intensity* (mild, moderate, or marked), and *stage* (early, immediate, or advanced). The time factor is emphasized throughout as a most important and insufficiently recognized element. ". . . Tissues manifest cumulative as well as contemporaneous pathology," but there is no necessary relation to the diet in a particular limited period. At the risk of seeming to disregard diet, Dr. Kruse points out the longer time needed for human nutrition research. Actually, it is doubtful that the reader will feel diet is "overlooked"; rather, the multiple influences are shown in a balanced view and the nutritionist will feel challenged to seek the determining factor.

The table, "Classification of Conditions," is a fascinating one. Again the element of time is emphasized. The list of socio-economic factors includes listing "living conditions," "available foods," "ability to seek them," as well as the usual "income" and "education" factors.

Dr. Kruse's statements regarding the effect of external and internal conditions influencing tissue requirements and consequent nutritional level are persuasive and his examples of stress graphically chosen.—*Marguerite J. Queneau, Associate Nutritionist, New York State Department of Health, Albany.*

Nutrition Manual for Nurses. Vol. I. Nutrition and Cookery. By Alberta Dent Shackleton. Ithaca, N. Y.: The author (914 E. State St.), 1951. Paper, spiral bound. Pp. 148. Price $1.85.

Nutrition Manual for Nurses is planned as a study guide and may be used advantageously with any of the several recent nutrition textbooks written for nurses. The material is so arranged that the nutrition classes and laboratory practice periods parallel each other, thus tying theory and practice together. Each nutrition section briefly presents information pertinent to the topic, as the author intends that this material will be supplemented by readings in the textbook and by class discussion.

Volume I is intended for use in the basic course in nutrition and cookery. It is divided into two units, the first of which is concerned with "Essentials for Good Nutrition," the second unit with "Planning for Good Nutrition."

Laboratory assignments allow for the preparation of representative foods illustrating the basic principles taught in the nutrition class and also for the use of these foods on simple meal trays. Space is provided in the laboratory section for the nurse to jot down notes. Some exercises in food calculations are also planned for most of the early laboratory periods.

The manual also contains many suggestions for dishes to be prepared in class, thus facilitating student assignments of specific foods. Recipes are not included, but references to these sections in the various texts are given so that the individual instructor may make her own selections.

The order and treatment of the material is excellent. However, there is a conspicuous error in print in the part of the manual dealing with minerals, i.e., the daily iron requirement expressed as "12 gms." should read 12 mg.

In this reviewer's opinion, teaching dietitians should review this manual prior to selecting one to accompany their students' text for the next class.—*Dolores F. Moore, Teaching Dietitian, Mount Sinai Hospital School of Nursing, Chicago.*

The Complete Book of Home Baking. By Ann Seranne. Garden City, New York: Doubleday and Co., Inc., 1950. Cloth. Pp. 386. Price $3.95.

This *is* a complete book of home baking—and there a review could end, for in this one volume, the subject of baking is dealt with to the satisfaction of all.

From the basic directions for a good loaf of white bread, the author takes up other breads, rolls, coffee cakes and bready sweets, and desserts. Here are kuchens, stollens, babas, and panettone. Quick breads, from biscuits and cobblers to fritters and waffles, are followed by wonderful cakes of all kinds, cookies of all descriptions, pies and puddings, fine pastries, and the climax—frostings, fillings, and sauces.

Many illustrations and simple-to-follow directions insure the book's popularity with its readers. Attention should be called to the recipes from many regions and many nationalities, and for many holidays and special occasions. A chart on freezing of breads, pastries, and other baked goods should make *The Complete Book of Home Baking* valuable to those in institutions with freezing facilities as well as to homemakers.—*Virginia Monahan Bayles, Department of Home Economics, University of Colorado, Boulder.*

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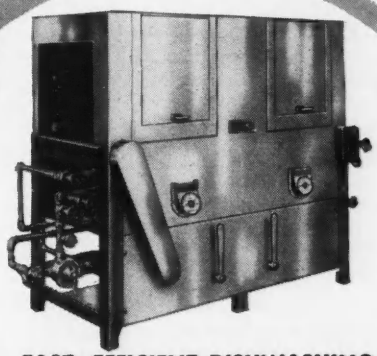

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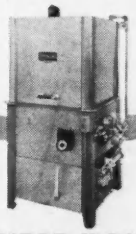

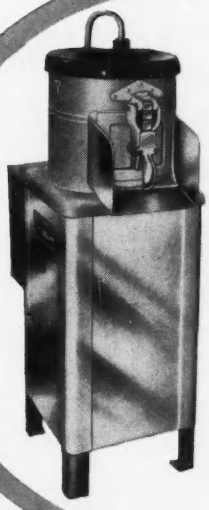

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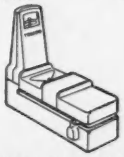

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Current Literature

Contributed by Mildred Bonnell and administrative interns, University of Washington, Seattle; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Mame Dentler, Northwestern University Medical School, Chicago; Pauline Kegereis, The Children's Mercy Hospital, Kansas City, Missouri; and the Journal staff

AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 166, September, 1951

Effects of hormone, vitamin and liver supplement on the appetite and growth of the young rat during recovery from chronic starvation. F. H. Quimby.—p. 566.

* Effects of renin on excretion of sodium, chloride, and water in the rat. A. L. Sellers, S. Smith, H. C. Goodman, and J. Marmorston.—p. 619.

Proteinuria in the Rat. In the rat, renin administration increased the urinary volume and concomitantly increased the sodium and chloride concentrations of the urine to levels exceeding those in the serum. There was no increase in the serum sodium or chloride concentrations as a result of renin administration. Renin did not cause an increase in the rate of glomerular filtration as determined by the clearance of exogenous creatinine. In rats previously given high-salt loads, renin caused a fall in the sodium and chloride concentrations in the urine toward the levels found in the serum. The results indicate that in the rat, renin impairs the ability of the renal tubule to reabsorb differentially sodium, chloride, and water.

ARCHIVES OF PEDIATRICS

Vol. 68, September, 1951

* Clinical observations on early administration of polyvitamin solutions to newborn infants. J. Schwartzman, M. E. Morcy, D. Brand, and C. H. Nau.—p. 417.

Polyvitamin Solutions in the Newborn. Newborn infants were given aqueous solutions of multi-vitamins from the day of birth until the day of discharge from the hospital. All infants who gained weight showed approximately the same gain; however, the administration of the polyvitamins reduced the percentage of newborn infants who showed an initial weight loss. The occurrence of skin eruption increased. Therefore, in those babies who tolerate these preparations and do not develop skin lesions, polyvitamin preparations can be utilized as an additional aid in diminishing the amount of initial weight loss and reducing the number of losers.

CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 65, October, 1951

* The treatment of peptic ulcer in general practice. J. Bingham.—p. 313.

Treatment of Peptic Ulcer. The treatment of an acute attack of gastric and duodenal ulcer consists of bed rest and hourly feedings of a mixture of milk and cream. Later, three bland meals are superimposed on the basal hourly feedings. When the patient returns to work, a more liberal diet is permitted, and a mineral antacid may be alternated with the basal hourly milk and cream. Measures to minimize the possibility of ulcer recurrence are discussed, as well as the selection of cases for surgery.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 147, October 6, 1951

* Artifacts in the estimation of protein-bound iodine. Editorials and Comments.—p. 578.

Vol. 147, October 13, 1951

Allergy therapy. Some common misconceptions. S. M. Feinberg.—p. 617.

* Pica. Queries and Minor Notes.—p. 706.

* Lead and vinegar. Queries and Minor Notes.—p. 708.

Vol. 147, October 20, 1951

Bowel disturbance and diabetes. Queries and Minor Notes.—p. 796.

Vol. 147, October 27, 1951

Radioactive-iodine-induced hypothyroidism in the treatment of cardiac patients. Editorials and Comments.—p. 874.

Metabolic fate of thiopental sodium. Editorials and Comments.—p. 875.

* Utilization of carbon dioxide by the animal organism. Editorials and Comments.—p. 876.

* Biochemical disturbances in hypertension. Correspondence.—p. 893.

* Vitamin B_{12} in the treatment of multiple sclerosis. Correspondence.—p. 894.

Vol. 147, November 3, 1951

* Ascorbic acid content of tomato juice. Council on Foods and Nutrition.—p. 951.

* Vitamins and blood regeneration. Editorials and Comments.—p. 979.

Histamine analog. Editorials and Comments.—p. 981.

Vol. 147, November 10, 1951

* Obesity and its relation to health and disease. D. B. Armstrong, L. I. Dublin, G. M. Wheatley, and H. H. Marks.—p. 1007.

* Present status of obesity problem. C. J. Barborka.—p. 1015.

Hyperpotassemia and hypopotassemia in case of anuria followed by severe diuresis. Clinical Notes. M. Bernreiter and E. R. Calovich.—p. 1036.

* Addition of fluoride to water. Correspondence.—p. 1070.

Protein-Bound Iodine. Ordinarily, protein-bound iodine of the serum is a reliable index of activity of the thyroid gland. But several factors that are unrelated to functional activity of the thyroid gland can influence these tests. These are pointed out and explained.

Pica. A physician asks why a three-year-old boy who is a cretin and receiving thyroid should crave coffee grounds. The answer is given that there is no known nutritional factor in coffee grounds that cannot be obtained from other dietary ingredients; that the habit of eating bizarre substances is a perverted appetite known as "pica."

Lead and Vinegar. One of the questions concerning these two subjects was: "What harm does vinegar do in the human body, if any?" The reply is that ordinarily it is harmless, but that it *can* cause mild gastritis or enteritis.

Carbon Dioxide and the Animal Organism. Since isotopes have been used as tracers in metabolic studies, it has become evident that animals, as well as plants, can and do use carbon dioxide to synthesize essential compounds. The role which carbon dioxide plays with various metabolites is mentioned.

Hypertension. In discussing the biochemical disturbances in hypertension, it is agreed that a low-sodium diet has been shown to cause a decrease in intracellular sodium and an increase in intracellular potassium in normal experimental animals. Such a diet is known to be effective therapy in a significant number of patients. Experiments have shown that electrocardiographic abnormalities in hypertension in man can be changed toward normal, not only by a low-sodium diet but also by a high-potassium diet; that in one patient with hypertension (associated with excessive sodium intake) hypertension was not induced by sodium unless potassium intake was minimal.

Vitamin B_{12} and Sclerosis. After studying twenty-four patients at Montefiore Hospital in New York City, it was concluded that vitamin B_{12} is not effective in the treatment of multiple sclerosis.

Ascorbic Acid in Tomato Juice. The Council has accepted canned or frozen tomato juice which has, at the time of processing, a natural content of ascorbic acid of at least 17.5 mg. per 100 cc.

Vitamins and Blood Regeneration. This is a review of the present knowledge of the role various vitamins play in the regeneration of blood in patients with various types of anemia. It is observed that there probably are other precious chemical substances in liver and yeast capable of producing blood regeneration which have not yet been isolated and synthesized.

Obesity. Various problems resulting from obesity are discussed along with principles of weight reduction. It is stated that weight control is the patient's responsibility; the physician can only educate the patient to accept it and show him how to reach his objective.

Obesity Problem. The author points out that weight reduction is not a simple problem. He further says that, in many patients, one of the causes of failure to

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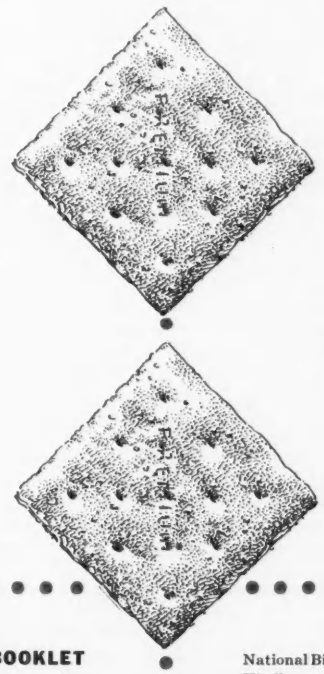

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reduce is their lack of perseverance in following a restricted diet long enough to overcome the tendency of tissues to retain water to compensate for the fat oxidized. Follow-up care is just as vital to success in management of obesity as in the management of diabetes or in preventing recurrences of peptic ulcer.

Fluoride in Water. The American Water Works Association states that its engineers, administrators, and staff wish to go on record as being willing to cooperate with authorities in a program of fluoridation of public water supplies. They do not promote fluoridation. They feel that recommendations should stem only from dental, medical, and public health groups.

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 192, October, 1951

* Conversion of C^{14}-palmitic acid to glucose. I. In normal and diabetic rats. E. H. Strisower, I. L. Chaikoff, and E. O. Weinman.—p. 453.

Conversion of C^{14}-Palmitic Acid to Glucose. Two types of experiments were carried out to study the conversion of palmitic acid-1-C^{14} and palmitic acid-6-C^{14} to glucose. In one experiment, 3 to 6 per cent of the injected palmitic acid-6-C^{14} was recovered in the urinary glucose collected from diabetic rats. From previous experiments, it is estimated that 6 to 12 per cent of injected C^{14} is incorporated into glucose in 24 hr. In the second experiment, the incorporation of fatty acid-C^{14} into plasma glucose 1 hr. after injection was determined. From 1.6 to 2.9 per cent was recovered in diabetic rats, 0.5 to 0.9 per cent in normal rats. The significance of glucose synthesis from fatty acids in normal and diabetic rats was estimated. It appears that less than 5 per cent of the total glucose turned over per hour in normal rats, and less than 10 per cent in diabetic rats, is derived from fatty acids. These values represent the lower limits of glucose synthesis from fat.

JOURNAL OF HOME ECONOMICS

Vol. 43, November, 1951

* Food and the present world tensions. S. Andrews.—p. 691.
* The quality and practicability of a refrigerated prepared dry corn meal muffin mix. M. Gothard.—p. 713.

Breakfast habits and children's personality. E. A. Lippincott.—p. 721.

Food and World Tensions. Three points are covered in this discussion of food and present world tensions. The first is concerned with the part food has played and is playing in the unsteady, explosive situation in the world today. The second points up the role of the farm family in world affairs, principally from the background of the families in the predominantly rural and underdeveloped areas of the world. The third stresses the role of the American farm families in providing some of the world's food in recent years and what is likely to be expected of them in the next few years.

Corn Meal Muffin Mix. A successful procedure has been developed for preparing a refrigerated dry corn muffin mix. It was developed with the homemaker in mind. The recipe is given.

THE JOURNAL OF NUTRITION

Vol. 45, September, 1951

* Raw versus processed corn in niacin-deficient diets. J. Laguna and K. J. Carpenter.—p. 21.
* The nutritive effect of heating lactalbumin in the presence of various reducing sugars. L. J. Schroeder, R. A. Stewart, and A. H. Smith.—p. 61.
* Biologic utilizations of unmodified and modified food starches. L. E. Booher, I. Behan, and E. McMeans.—p. 75.
* Nitrogen loss in the feces: the variability of excretion in normal subjects on constant dietary intakes. V. Toscani and G. D. Whedon.—p. 119.

Vol. 45, October, 1951

* Excretion of the two biologically active forms of ascorbic acid and of diketogulonic acid by human subjects. S. D. Chen and C. Schuck.—p. 165.
* Calories—a limiting factor in the growth of children. I. G. Macy and H. A. Hunscher.—p. 189.
* The calcium balance of adult human subjects on high- and low-fat (butter) diets. F. R. Steggerda and H. H. Mitchell.—p. 201.

Raw vs. Processed Corn in Niacin-Deficient Diets. The growth depression of rats fed a high-corn diet, in the absence of niacin, was reduced by steeping the corn in lime water, then neutralizing and drying it, a process similar to that commonly used by Mexicans in making "tortillas." Corn reconstituted from the fractions obtained on wet-milling did not show this enhanced effect; it was no different in its effect from the untreated material. The full effect of the lime-water treatment was obtained by treatment of the non-starchy fractions—gluten, germ, and feed meal.

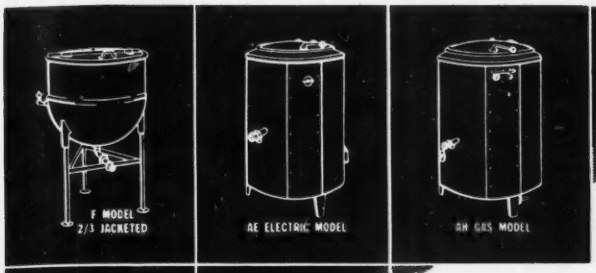
Reducing Sugars and Heated Protein. The nutritional value of extracted lactalbumin, when autoclaved with equimolar concentrations of lactose, glucose, maltose, zylose, and fructose, was significantly decreased. No distinction between these sugars could be demonstrated. When extracted lactalbumin was heated under similar conditions in the absence of reducing sugars, there resulted a decrease in nutritional value, but not so great a decrease as was observed when the reducing sugars were present. The decrease in nutritional value was attributed to a decreased digestibility. The biologic value of that portion of the heated protein which was digested and absorbed was uniformly high.

Utilization of Starches. Investigations of unmodified starches, including those from cereal grains (wheat, rice maize, and waxy maize), from aerial stems (sago palm), and from plant roots and subterranean stems (arrowroot, cassava, sweet potato, and white potato) have shown that they possess wide differences in physiologic assimilability in young male rats. Unmodified starches isolated from cereal grains and cassava roots evidenced high degrees of assimilability coincident with roughly 98 per cent digestibility; those from arrowroot, white potato, and sago palm evidenced low degrees of digestibility which varied inversely with the intake or dietary level of these starches; and that from the sweet potato occupied something of an intermediate position. Viewed from the standpoint of physiologic processes, the data herein presented suggest that the relatively low digestibilities of unmodified sweet potato, potato, arrowroot, and sago starches were occasioned by an insufficient amount or concentration of amylase, or of some agent in the digestive juices which is required to modify these starches prior to attack by amylase.

Nitrogen Loss in the Feces. A survey was made of the variation in fecal nitrogen excretion of four normal healthy subjects on constant dietary intakes for four to five months. During 99 metabolic periods of 7 days each in which the nitrogen intake was identical among the subjects (14.42 gm. daily), the fecal nitrogen ranged from 0.91 to 2.22 gm. Variation in fecal nitrogen excretion was more marked from one subject to another than from period to period in an individual. Since appreciable variation in fecal nitrogen loss occurred under optimal conditions for constancy, it would be unwise in an individual experiment to assume fecal nitrogen to be either 10 per cent of the intake nitrogen or a fixed value of 1.3 gm. For reliability, direct analysis of fecal nitrogen is indispensable.

Excretion of Ascorbic Acid. The excretion of reduced ascorbic acid, dehydroascorbic acid, and diketogulonic acid has been observed with subjects on customary diets; on low-vegetable and -fruit diets, unsupplemented and supplemented with varying levels of ascorbic acid in the form of tablets; and on a constant basal diet supplemented with crystalline ascorbic acid, cantaloupe, and grapefruit. All three substances were excreted on all dietary regimens. A larger intake of fruits and vegetables resulted in increased excretion of reduced ascorbic acid but had little or no effect on the output of dehydroascorbic acid and diketogulonic acid. Supplementation of low-vegetable and -fruit diets with crystalline ascorbic acid likewise increased the reduced ascorbic acid output, but had little or no influence on the dehydroascorbic acid and diketogulonic acid output. The higher intake of dehydroascorbic acid and diketogulonic acid on the constant diet plus the cantaloupe supplement did not increase the excretion of these two substances above that observed on the constant diet supplemented with crystalline ascorbic acid and grapefruit. The average excretion of reduced ascorbic acid for a given subject did not vary greatly for the different supplements.

Calories and Growth of Children. Values illustrating pertinent aspects of the relation of caloric intake to growth were selected from the published data of a comprehensive study of nutrition and chemical growth in childhood. The values demonstrate: (a) that there is wide variation in the growth progress of the same child at different times and of different children at the same time; (b) appetite may not be relied upon to assure ingestion of quantities of a good mixed diet which will provide sufficient calories for satisfactory weight gains; (c) that existing "standards" may not be depended upon in every instance as criteria



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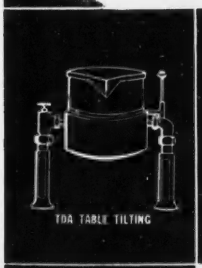

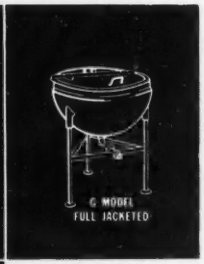

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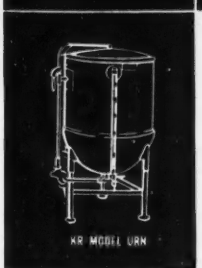

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of dietary adequacy; (d) that there is a depression of nitrogen retention when caloric intake is insufficient to permit proper gain in body weight; (e) that invisible growth may occur, as evidenced by nitrogen retention, coincident with failure to accomplish satisfactory gains—or even with a loss—of body weight; (f) that a difference of as few as 10 calories per kilogram of body weight may spell success or failure in making satisfactory progress in visible and invisible growth.

Fat and Calcium Utilization. Calcium metabolism studies have been reported for thirteen adult men, ranging in age from 19 to 44 years, involving 50 experimental periods of 12 to 30 days' duration. The main purpose of the investigation was to study the effect of variable dietary levels of milk fat (from 1 to 32 per cent on the dry matter basis) on the utilization of dietary calcium, an average of 47 per cent of which was derived from milk. For the type of dietary fat studied and the range of intake employed, no effect on calcium was noted.

NEW YORK STATE JOURNAL OF MEDICINE

Vol. 51, October 15, 1951

* Ascorbic acid in the treatment of burns. D. H. Klasson.—p. 2388.

Ascorbic Acid in Burn Treatment. Ascorbic acid was used, topically, by mouth, or parenterally in the treatment of burns. Clinical observations showed that ascorbic acid is capable of alleviating pain in minor burns, hastens the healing period, aids in combating the accumulation of toxic protein metabolites in the severely burned, and reduces the time interval necessary for skin grafting.

NUTRITION REVIEWS

Vol. 9, September, 1951

* Nutritional problems of patients with burns. S. M. Levenson and E. I. Evans.—p. 257.

Nitrogen-sparing effect of carbohydrate.—p. 264.

Body fat in man.—p. 265.

Occupations and calorie needs.—p. 273.

Sodium restriction in control of ascites.—p. 278.

Vitamin deficiency signs during antibiotic therapy.—p. 283.

Vol. 9, October, 1951

* Nomenclature of the vitamins. V. H. Cheldelin.—p. 289.

Storage of iron in the body.—p. 293.

Food intake of elderly hospitalized patients.—p. 304.

The energy expenditure of children.—p. 312.

Nutrition applied to clinical psychiatry.—p. 314.

Nutritional Problems in Burn Patients. Laboratory studies of nutritional disturbances of patients who suffered thermal burns are reported. Deep burns may lead to marked metabolic changes depending on such factors as age, sex, and state of nutrition of the patient at the time of injury. Lack of appetite and alterations in the gastrointestinal function may be seen in severe cases, especially if shock is present. It is suggested that nutritional requirements be anticipated and met before malnutrition occurs. Demands should be met by oral feeding, if possible. If not, then gastric, jejunal, and/or parenteral feeding should be used. Administration of blood plasmas, albumin, electrolytes, water, carbohydrates, and vitamins should all be included in large amounts. For children, an intake at least one and a half times the recommended allowances is suggested. Liquid diets supplying 20 to 45 per cent of the calories from fat for either oral or tube feeding have been used by the authors with success.

Nomenclature of Vitamins. This article gives a brief history of the vitamins, with short and concise statements clarifying the nomenclature and differentiation of the vitamins, along with some information as to which are essential.

PUBLIC HEALTH NURSING

Vol. 43, September, 1951

Planning the low sodium diet. A. Reimer.—p. 496.

Vol. 43, November, 1951

* Food patterns in New Mexico. D. B. Hacker.—p. 589.

Food Patterns in New Mexico. The food patterns in New Mexico are influenced by the background of four groups of inhabitants—Indian, Spanish, Mexican, and English. The food intake of rural groups, city dwellers, and Indians in the pueblos (villages) is described and evaluated. Of considerable interest, too, is the description of New Mexican specialty dishes, such as fried breads, enchiladas, tacos, and tamales.

PUBLIC HEALTH REPORTS

Vol. 66, October 26, 1951

* Domestic water and dental caries. VII. A study of the fluoride-dental caries relationship in an adult population. A. L. Russell and E. Elvove.—p. 1389.

Domestic Water and Dental Caries. Lists of natives twenty to forty-four years old with verified histories of residence and water usage were prepared in Boulder, Colorado, where the communal water is virtually fluoride-free, and in Colorado Springs, where the communal water contains about 2.5 p.p.m. fluorides. The cities are otherwise similar, and the two groups are comparable in race and occupation. Persons on the lists were given dental examinations with mouth mirror and explorer. The prevalence of fluorosis was uniform through the age range at Colorado Springs. No fluorosis was seen in natives of Boulder. Total rates for decayed, missing, or filled permanent teeth were about 60 per cent lower in Colorado Springs than in Boulder. The phenomenon of caries inhibition continued undiminished through the age of forty-four years. Boulder natives had three or four times as many teeth affected by dental caries as had natives of Colorado Springs. The observed caries-inhibitory effect was essentially similar in pattern and magnitude to that seen in children native to fluoride areas.

SCIENCE

Vol. 114, September 21, 1951

* Some properties of an ascorbic acid oxidation inhibitor in vegetables. B. J. Branthoover and M. M. Hard.—p. 296.

Vol. 114, September 28, 1951

The effect of aureomycin and vitamins on the growth rate of chicks. J. Biely and B. March.—p. 330.

Ascorbic Acid Inhibitor in Vegetables. Experiments indicate that vegetables contain an inhibitor of ascorbic acid oxidation. Action varies with different vegetables, however. It has been shown that the ascorbic acid content of frozen spinach decreased more rapidly than did the ascorbic acid of frozen snap beans. In this particular study, some properties of the inhibitor in snap beans are described.

SCIENTIFIC MONTHLY

Vol. 73, October, 1951

* New tortillas for old Mexico. N. F. Gurley.—p. 260.

New Tortillas for Old Mexico. In Mexico, the tortilla has come down through the rise and fall of several civilizations with very little modification. It is prepared by overnight steeping of the dried whole corn kernel in heated lime water, after which the swollen kernels are drained and ground in a small mill. Dough of the proper consistency is obtained by the addition of small amounts of water during milling. This dough is often prepared in a small shop which supplies the surrounding neighborhood. The women buy the dough and then pat out their own tortillas. Tortillas are as important in Mexico as is bread in the U. S. Approximately 96 per cent of the annual production of over 3 million tons of corn in Mexico is used for food, mostly in form of tortillas. There is need for cleaner, more nutritious, better stabilized tortillas, which will withstand the present distribution system. The commercially sold dough as now made is highly perishable. Production on a pilot plant scale of a dehydrated tortilla flour has begun, and large-scale production is expected in about two years.

AMERICAN RESTAURANT MAGAZINE

Vol. 35, October, 1951

* Controlling costs through greater operating economies. P. P. Logan.—p. 42.
* Newest idea in fast food service.—p. 46.
* Chinaware breakage licked with a system. J. Carbone.—p. 54.

Lower costs with time and motion studies. M. R. Nystrom.—p. 56.

* Profits in scales. C. B. Eaton.—p. 80.
* A year's report on cost controls. W. C. Ewart.—p. 83.

Better cost control with prefabricated meats. L. Hilaire.—p. 88.

* Employee meetings, sanitation classes important to restaurant. R. C. Matson.—p. 94.

Vol. 35, November, 1951

* Some ways and means of cutting restaurant costs.—p. 52.
* To save meat . . . roast at 250° to 300°F. J. A. Cline.—p. 62.

Cost Control for Operating Economy. Operating economy is defined as "any action . . . to reduce costs in food, labor, or overhead, without detracting from the quality of food or food service . . . [or] the standards of pleasant or sanitary surroundings . . . [or] employee morale." Savings, however, the author states, can

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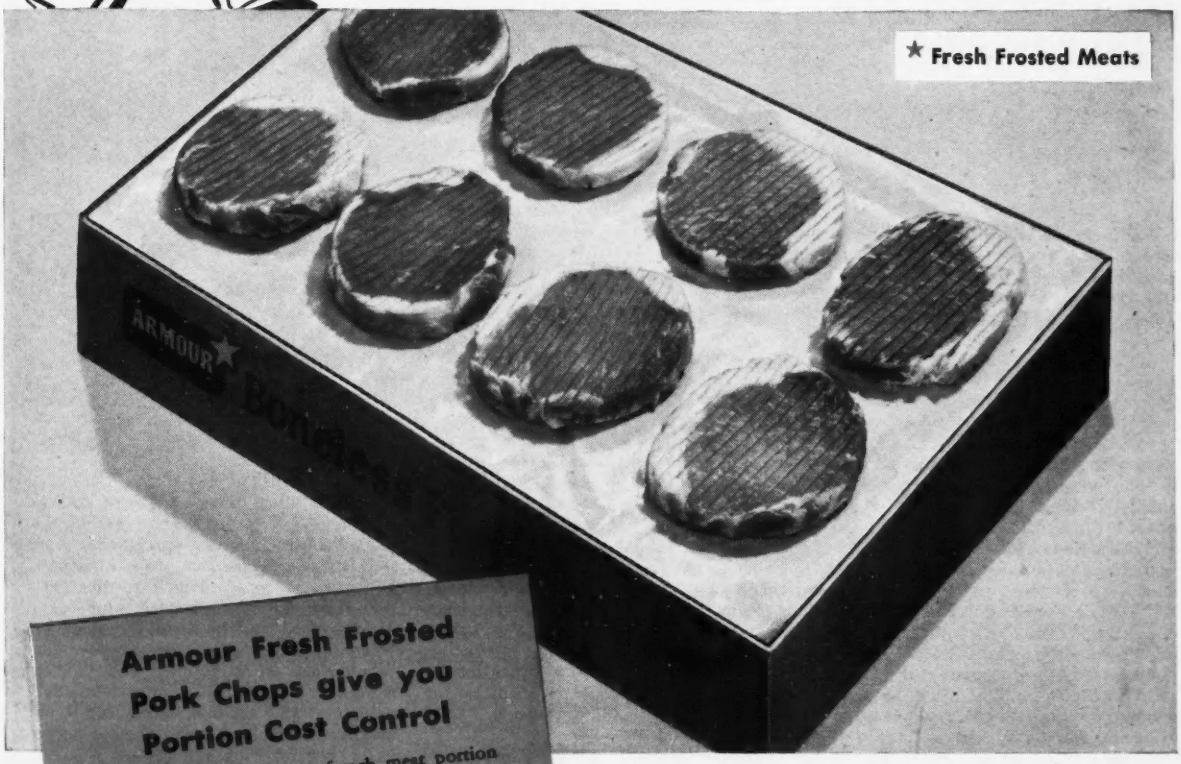

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be effected in food, labor, overhead, and also equipment costs, without incurring the expense of any of these factors. The fields of sanitation, dishwashing, silver washing, lighting, hot water, refrigeration and ice (and their dehydration of foods), labor-saving foods, and loss of meat through high cooking temperatures are discussed in relation to cost control. Frequently investment in further equipment is recommended as a long-range economy plan, and the elimination of inefficient or sloppy workers is emphasized.

Fast Food Service. Delivery of orders by a conveyor belt controlled by color-sensitive electric eyes is the new idea of a fountain luncheonette in a Detroit department store. Savings are effected in employee steps, traffic noise, and breakage. The operation of the new-style service is described.

Chinaware Breakage Reduced. One hundred eighty-six cups are quite a few to be broken. However, when you balance that number against 341,000 customers served during the period when these cups were broken, the record of a Tacoma restaurant is outstandingly good. Cups in this establishment are never out of the racks except when actually in use. This is achieved by use of a dolly—specially constructed with four shelves and casters. The layout of the restaurant is another factor in the low breakage rate. The convenience of the arrangement is also responsible for reduced employee turnover.

Profits in Scales. "The only scales that most [restaurants] seem to have," laments the restaurateur-author of this article, "are the scales you find on the fish when they come in." Only 60 per cent of restaurant operators, he found as a result of a recent survey, own scales, and half that number use them. Portion control, therefore, must struggle against dishonest food sellers and human errors in eye measurement—and true portion control is impossible without weighing foods.

Year's Report on Cost Controls. "A system of operations," declares the author, a Virginia cafeteria man, "is only as good as the one who is administrating it." Hard work, interest, and vigilance are irreplaceable in carrying out a cost control system—but the system itself, of course, must be worth while. The cafeteria described is using a system outlined by the author in the October 1949 issue of *American Restaurant Magazine* and definite progress is reported. A few of the details of the system include: combining payroll and food costs by departments; working on each department individually; careful purchasing and control of supplies; and purchase of new time- and labor-saving supplies.

Employees Meet for Training and Morale. Monthly meetings are held for the employees of an Omaha restaurant, both for improvement and so that they may hear reasons why new measures have been taken. Sanitation classes have been held with the cooperation of the city sanitation department; improvements in attractiveness of the restaurant—both for customers and for employees—have been made; and employee benefits have been instituted, as a result of this procedure.

Cutting Restaurant Costs. This article lists questions and answers provided at the 32nd annual Mid-American Restaurant Exposition in Ohio last September, on subjects such as: food cost control via inventory; employee problems, e.g., kitchen men's resentment toward a woman supervisor; decrease in labor costs; and cutting costs with equipment. A few problems about restaurant cooking are also discussed.

Roast to Save Meat. Proper cooking of meat is outlined here. Cuts of meat for roasting; number of pounds of beef, veal, lamb, and pork needed; steps in the actual operation; factors affecting roasting time; and quantity recipes are covered.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 11, October, 1951

* Food service picture in college field in 1951. M. deG. Bryan.—p. 45.
* Seven eating clubs under one roof share a common lounge. F. Glover.—p. 47.

Vol. 11, November, 1951

* Faculty club has buffet service. S. Wilson.—p. 49.

College Food Service, 1951. Panic and competitive buying, plus wasteful hoarding, are the hazards to college food service of the national emergency. Dr. Bryan urges that colleges observe practices, such as sensible inventory and conservation, which tend to bring food prices down or keep them stable, rather than to accelerate inflation. Rigid price controls (with little likelihood of students' becoming wealthier) and limitation of supplies, as well as sharp increases in labor costs, are other present day problems. Another point that Dr. Bryan mentions is the nutrition of the average college student. Her survey definitely indicates that students who eat regularly in residence halls are far better nourished than those who "eat around" in restaurants or those who eat either in the college dining room or the snack bar, depending on their whims. Feeding of students, Dr. Bryan emphasizes in her conclusion, is still considered merely a business enterprise. Modern education, which is education for living, should include opportunities for social development through food services.

Faculty Eating Clubs. This article describes the new building soon to house Stanford University's seven eating clubs, a traditional part of the university life since 1912.

Club Buffet Service. Increasing costs of food and labor were the motivating factors in instituting buffet service at the faculty club for men in the University of California, Berkeley, and replacing the traditional table service. First tried as an experiment and protested by many members, the service proved successful. The plan for the buffet system is illustrated. The women's faculty club, the article notes, has adopted the same procedure, except that food is not prepared in the kitchen but brought in from the central student cafeteria.

FOOD ENGINEERING

Vol. 23, October, 1951

* New infra-red broilers make meat balls better. R. Bloomberg.—p. 91.
* Bisulfite keeps horseradish fresh. L. L. Davis.—p. 113.
* New equipment and supplies.—p. 123.

New Broilers Brown Meat Balls. Continuous infra-red broilers turn out uniformly browned meat balls. The process eliminates burning grease fumes and provides a saving in labor cost and product waste.

Keeping Horseradish Fresh. The shelf life of grated horseradish can be prolonged two or three times by the addition of a small amount of potassium metabisulphite at the time of packing. This treatment brings about a retention of pungency, aroma, and odor, as well as color. Preparation of horseradish by this method is described.

New Equipment and Supplies. A lamp has been developed which dissipates odors by ozone, an air purifier. . . . Milk that is no longer fresh can be rapidly detected by the use of a *p*H strip-test paper. . . Deterioration and loss of flavor in fruits and vegetables caused by microorganism contamination is said to be reduced by action of peracetic acid which ultimately decomposes into nontoxic and free-rinsing products.

HOSPITALS

Vol. 25, November, 1951

Cooperative planning of dietary services for 50 to 200-bed general hospitals.—p. 85.

HOTEL MANAGEMENT

Vol. 60, October, 1951

* Setting up a banquet in a jiffy. J. D. Fellers.—p. 51.
* Cooking methods for emergencies. A. Easton.—p. 66.
* Eggs. P. P. Logan.—p. 69.

Streamlining Banquet Preparations. A system for setting up banquet tables and chairs with minimum labor is described. The tables should be numbered and stored in consecutive order to eliminate time and motion in matching them. A long cord can be used for aligning tables, and the width between tables can be marked on a notched rod. There should be a list of all requirements for complete table set-ups, which should be arranged on shelved carts. The use of two carts, one for each side of the room, is recommended. To reduce excessive motion, each table can then be completely serviced as the cart passes closest to it.

Emergency Cooking. Suggestions for planning mass feeding in the event of attack are given in this article. For preparing large quantities of food or heating water, the use of large metal drums for stoves is recommended. Water must be boiled or purified before using. Possible substitutes for water, in the event of a shortage, would be canned juices or concentrates. Food that is susceptible to bacterial growth should be marked as to the time it was prepared and the length of useable keeping time. Dried milk, eggs, and dehydrated foods are convenient under such conditions.

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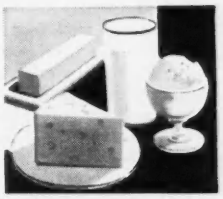
Research on teen-agers emphasizes the importance of an adequate calcium intake for growing young people.

One quart of milk daily during childhood—particularly when supplemented with vitamin D to insure maximum absorption and utilization of calcium—provides for ample storage of this mineral prior to the rapid growth period of adolescence.[1] The recommendation has been made that, during this period of accelerated growth, the daily milk intake of rapidly growing boys be increased to one and one-half quarts.[2] Not all of this needs to be in the form of fluid milk—cheese or ice cream may be substituted for equivalent amounts of milk as a rich source of calcium.

Boys and girls need ample supplies of *all* nutrients to meet demands for growth and activity. In addition to providing calcium for sturdy bones, milk supplies high-quality protein for growth of muscles and other tissues. In amounts recommended, dairy foods—milk, butter, cheese, ice cream—also make substantial contributions to the energy value of the diet, and to the supplies of riboflavin, vitamin A, thiamine, phosphorus, magnesium, and other essential nutrients.



Milk and milk products, as parts of an adequate diet for our youngsters, represent an investment in good health, strength, and morale for our country.

1. Stearns, G. *Human requirements of calcium, phosphorus, magnesium.* J. Am. Med. Assn. *142*:478 (Feb.) 1950.
2. Smith, J. M. *Calcium needs of teen-age boys.* Nutrition News, (April) 1947.

The presence of this seal indicates that all nutrition statements in the advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

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Since 1915 . . . the National Dairy Council, a non-profit organization, has been devoted to nutrition research and education to extend the use of dairy products.

Eggs. This article gives information on government grades of eggs, the use of different grades, recent developments in egg preservation, and the use of processed eggs. Whole eggs, yolks, whites, and special blends, with or without sugar and/or salt added, are available in frozen form. The quick method of thawing frozen eggs is to place the can in warm water for a few minutes and slip the frozen eggs out. Thawed frozen eggs should be used quickly to prevent spoilage. The ideal refrigeration of eggs is 35° to 45°F. with 85 per cent relative humidity.

THE HOTEL MONTHLY

Vol. 59, October, 1951

* French fried potatoes can be good and profitable. —p. 52.

Vol. 59, November, 1951

* Lift loads safely.—p. 44.
* Ten pointers to food success. J. E. Moss.—p. 51.

French Fried Potatoes. More potatoes are used in restaurants each day than almost any other single item. Therefore, the economical and profitable production of French fries is an important factor in food cost control. Purchase price is not a true figure to use in determining the actual cost of potatoes per pound. Grades, spoilage, and losses in moisture and weight through "conditioning" enter into cost increase and weight reduction of potatoes. Losses also occur in preparation: peeling losses when tested range from 25 to 40 per cent; blanching causes additional loss of about 25 per cent; and browning adds an additional 16 per cent loss. "Conditioning," however, is a mixed blessing; although moisture is lost, the more important factor of fat is gained, for conditioned potatoes with a low moisture content will absorb less fat during frying. The fat in 50 lb. finished French fries will usually amount to about 8 per cent; total fat absorbed would equal about 4 lb. or 1.2 oz. per pound. Pre-pared or pre-blanched potatoes may be highly advantageous in convenience and savings in labor and storage in some situations, and their use may also result in improved food service with potatoes of uniform size and even brownness. These checkpoints can help you in buying processed potatoes; chemicals and processes used to prevent discoloration; processing date on packages; refrigerated delivery of pre-pared potatoes; type of fat used for bleaching process.

Lift Loads Safely. Strains, sprains, and hernias, the result of unsafe lifting and handling of materials, cause 25 per cent of all industrial accidents—accidents which are all preventable. The National Safety Council's recommendations for safe lifting and handling are listed in this article.

Pointers to Food Success. Hotel men, just like restaurateurs, must concentrate on their food departments to make them successful. In most cases, the combined sales in the food and beverage department exceed the sales in rooms, so more attention to this problem is definitely indicated. The author, an officer in a hotel chain, gives pointers on how to cut both apparent and hidden costs as well as ways to attract customers by: graciousness on the part of employees; attractive food arrangements; word-appeal in menus; and, of course, good cooking.

INDUSTRIAL AND ENGINEERING CHEMISTRY

Vol. 43, November, 1951

* Safety. V. R. Crosswell.—p. 147A.

Safety. Color—a useful aid in safety—will also improve visibility and boost industrial morale. The National Safety Council has recently published a data sheet titled "Color in Industry." It contains the most generally accepted instructions on how to use color in plant interiors. It can be a tool in producing good visibility, facilitating identification of various areas and objects, and reducing housekeeping and safety problems. The psychology of color is discussed, and the three color codes of the American Standards Association are summarized. Effects of color and designations by color of safe and unsafe areas are given in this article—but, the author concludes, ". . . if you do not like the expert's selection, paint it with colors of your choice. You are going to have to live with it . . ."

INSTITUTIONS

Vol. 29, October, 1951

* Analysis of personnel problems proves way to cut turnover.—p. 1.
* Menu dictates food service area allocation. P. Dukas.—p. 1.
* Teach employees 'new tricks' by group method persuasion. D. E. Lundberg.—p. 2.
* More variety in canned foods possible with aseptic process.—p. 3.
* Traces origin, expansion of food service. D. E. Lundberg and C. V. Kane.—p. 4.
* Protect patrons from infected pork products.—p. 12.
* Pocket profits from careful buying of canned foods. —p. 16.

System of checks, controls eliminates loss by fraud. G. L. Macha.—p. 81.

* Institute defines detergent qualities for asphalt tile.—p. 91.

Centralized feeding plan slices operating costs.—p. 92.

Cutting Employee Turnover. How can an institution lose *over* 100 per cent of its work force? It sounds impossible—but maybe your institution is one of the many that lose as much in money and human resources each year and accept the loss as inevitable. Staff erosion, one personnel authority's name for this condition, is just as deserving of forceful action as a formal strike. And, it is just as important in either case for management to learn the cause and satisfy the unvoiced demand implicit in such situations. Reasons for turnover are discussed: unavoidable "bad" working conditions, such as an all-night shift or isolated location; haphazard hiring; poor supervision; and periods of prosperity when jobs outnumber candidates. The techniques for solving such situations are recommended: "get *all* the facts, weigh and decide, take action, and check results." Six questions should be asked in obtaining the facts: *who* quit; *when*, *where*, and *why* they quit; *how* they quit; and *what* they were earning at the time. All are indispensable points for a true analysis of the problem which will be used to help the institution suit its "trouble-shooting" to its individual needs.

Food Service Area Allocation. This article deals with problems of mass feeding and emphasizes the importance of menu analysis in allocating space in the food service area.

Group Method Teaching. Guided discussion groups to introduce new food handling methods result in greater acceptance by employees than the lecture method. To get people interested in a new idea, they must be made to talk about it. People accept ideas more readily when they are emotionally involved with the ideas and change their attitude and behavior only when they decide for themselves. To get people to do anything, discussions will bring better results than will lecturing.

More Variety in Canned Foods. A new aseptic canning process will make possible a greater number of foods packed in number 10 cans. This process employs "flash" sterilization methods producing products of excellent flavor, color, texture, and vitamin content, even in large size cans. A whole new field in the packing of specialty items for institutions may result since this process makes possible the canning of products which have never been successfully packed before.

History of Food Service. Civilization, according to the authors, doesn't antedate public hospitality. The "businessman's lunch" was served to Roman ship brokers forty years before Christ, and ancient Greece and Syria maintained inns. Food service in the Middle Ages and in the Renaissance is also traced. The word "restaurant" came into use in sixteenth century France as a name for eating establishments, the word formerly having meant a spiced broth. Further history of inns and restaurants up to the present is given, and the hotel food business of today is thoroughly analyzed. Types of restaurants are classified, the growth of the "let's-eat-out" movement since World War II is noted, and predictions for 1975 are made.

Protect Patrons from Infected Pork. Almost all cases of trichinosis in man come from infected hogs. To protect patrons against trichinosis, be certain that all pork and pork products have been thoroughly cooked. The Trichinae may also be killed by refrigeration. A temperature of −16° F. for 36 hr. or −34.6°F. for 2 min. is effective in killing all larvae present.

Careful Buying of Canned Foods. This short article gives simple rules for purchasing canned foods. Standardized government grades for fruits and vegetables are listed, with actual results of: two tests of June peas and sliced beets; two tests of peach halves and pineapple slices; and one test of tomato juice.

Detergent Qualities for Asphalt Tile. Specifications for cleaners of the non-soap type have been established by the

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Mr. Anthony Sousa, proprietor, standing in front of his fine array of Sexton Foods for Restricted Diets.

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THE MODERN HOSPITAL

Vol. 77, November, 1951

* As a dietitian sees her profession. R. L. Lodde.—p. 112.

A Dietitian Sees Her Profession. Dietetics is traced historically by the author, from pioneers of the 1900's at Lake Placid through the birth of A. D. A. in 1917, up to the present day with its many opportunities for dietitians. The hospital dietitian's work, with its former limited scope of planning and serving special diets, is explained in the modern light of wider and more varied responsibilities; other opportunities are listed; and the author concludes with an urgent appeal for more professional activity among dietitians.

NEWS BULLETIN OF THE NATIONAL RESTAURANT ASSOCIATION

Vol. 32, November, 1951

* Food costs—and what to do about them. G. J. Poris.—Supplement.

Food Costs. Increased volume is not such a sure sign of success when increased costs creep in; therefore, this author's answer to profit vs. loss in these inflated times is: "go after your variable costs," particularly food costs. Purchasing, weighing, storage, and menu planning are discussed as fields in which variable costs can be controlled, and suggestions from restaurateurs throughout the country are given on how to serve low-cost menus which appeal to customers. Particular emphasis is placed upon portion control.

NUTRITION, DIETETICS, CATERING

Vol. 5, Autumn, 1951

* Nutrition and frozen food. H. Fox.—p. 237.

Nutrition and Frozen Food. Frozen food in the United States is discussed in this British periodical; the growth of the industry is described, together with the great variety of products now available in frozen form. The industry in Britain, the author states, is slower in growth but still notable. Vitamin A, thiamine, riboflavin, and ascorbic acid, in relation to frozen food, are considered.

PERSONNEL JOURNAL

Vol. 30, September, 1951

* Gaining employee cooperation. E. Fagg.—p. 136.

Vol. 30, October, 1951

* How we set your pay. A. E. Duncan.—p. 173.

Vol. 30, November, 1951

* Preparation for retirement. Esso Standard Oil Co.—p. 209.

Gaining Employee Cooperation. "I won't!" is the automatic reaction to peremptory, parentalistic, or self-deifying employer attitudes in addressing workers. An Eastern restaurant chain, realizing this, studied methods of influencing behavior before promoting a "Neatness Contest" for its waitresses. Positive reasons for winning the contest were used, and the successful results of the experiment are described.

Establishing Salary Scales. This article, which originally appeared in an insurance company's employee magazine, tells in story form how the company establishes the range for workers' salaries, with maximums and minimums. The process of job evaluation in the company is explained.

Preparation for Retirement. Medical progress has raised average life expectancy nearly twenty years in the last half century—and as the over-sixty-five group increases, industry, under its present policy, must suffer. Losses of actually able employees because of an arbitrary compulsory retirement age, can become an insupportable drain on the nation's economy. The company mentioned in this article feels, however, that retirement should be a "graduation" into a new phase of life rather than a "casting out" process, and prepares about-to-retire workers with a group discussion program. The program consists of five meetings concerned with, respectively, philosophy, medical care, financial security, case histories of others, and plans for future activity. The plan, however, does not solve the healthy, able older worker's problem.

PRACTICAL HOME ECONOMICS

Vol. 29, October, 1951

* Teaching foods on a meal basis. L. E. McAdams.—p. 440.
* What do they *like* to eat? G. E. Vail.—p. 441.

Teaching Foods on a Meal Basis. Seven specific suggestions for teaching a young girls' foods class are given.

What They Like to Eat. World War II, with many men eating in strange surroundings, motivated the mushroom birth of a new science—food acceptance. Prior to that time, families ate as they chose, and their members acted as an "evaluation committee." Even with the gradual tendency to eat in restaurants, the problem of food acceptance was not acute. Since the war, however, food acceptance has played an important part in institutional management, particularly as it relates to the school lunch program. In schools, as in the Army, the factor of prejudice is not predisposing to 100 per cent food acceptance. Also, the use of certain foods at different meals can help or hinder acceptance; e.g., the person accustomed to grapefruit for breakfast may not welcome it as a broiled dinner dessert. The psychologic, physical, and economic environment also enters into the picture.

WHAT'S NEW IN HOME ECONOMICS

Vol. 16, October, 1951

* How to suit a cake to the occasion.—p. 49.
  Styles of cake.—the traditional—the modern.—p. 50.

Cake for the Occasion. Various types of cake, baked at home or commercially in different ways, and principal types of frostings are listed in a handy guide for classroom discussion. The text of the article closes with a short discussion of suitability of cakes.

Meat... Its Place in the Dietary Management of Nephritis

The formerly held tenet that protein intake should be restricted for all patients with impaired renal function, in order to afford the kidney physiologic "rest," is no longer valid.[1] Except for infection and some neoplastic and traumatic disorders, the treatment of renal disease is nonspecific and essentially symptomatic. The clinical problem centers largely on diet regulation, in the hope of stimulating the kidneys to improve impaired function, without unduly risking harm.

Even in the presence of azotemia, a protein intake of 60 to 80 Gm. per day has not been found harmful to the renal patient. Low protein intake, on the other hand, together with urinary loss of protein may encourage the development of asthenia, anemia, hypoproteinemia, and edema.[2] Also pertinent to the dietary management in renal disease is the experimental finding that high protein diets in normal dogs promote higher urea clearance and greater renal blood flow than do low protein diets.[3,4]

Except in anuria, a protein intake adequate to maintain nitrogen balance has been suggested.[1] Although as little as 30 to 40 Gm. of protein per day may suffice for this purpose in the fever-free patient at bed rest, few occasions arise when 1 Gm. of protein per day per kilogram of body weight may not be given safely. In the presence of significant proteinuria, unless specifically contraindicated, the dietary protein may be increased beyond that amount in order to counterbalance the urinary protein loss.

Contrary to the still prevalent ancient belief among the laity, red meats are just as harmless to the renal patient as white meats; nor is there evidence that plant proteins are more beneficial in nephritis than animal proteins. As with the normal person, the dietary protein of the patient should be of high biologic value.

Meat, because of its high content of biologically complete protein, may contribute valuably to the protein needs of the nephritic patient. The nutritional importance of meat, however, is not limited to its contained protein. Meat also contributes highly significant amounts of iron and of the vitamin B complex, including niacin, pantothenic acid, pyridoxine, riboflavin, thiamine, and the newly discovered vitamin B_{12}. Other salient features of meat in the dietary of the patient are its high palatability, its stimulation of the digestive processes, its satiety value, and its easy and practically complete digestibility.

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1. Mann, G. V., and Stare, F. J.: Nutritional Needs in Illness and Disease, Handbook of Nutrition, American Medical Association, ed. 2, Philadelphia, The Blakiston Company, 1951, chap. 17, p. 351.
2. Weiss, S.: Diet and Bright's Disease, Connecticut M. J. 5:496, 1941.
3. Jolliffe, N., and Smith, H. W.: The Excretion of Urine in the Dog: II. The Urea and Creatinine Clearance on Cracker Meal Diet, Am. J. Physiol. 99:101, 1931.
4. Van Slyke, D. D.; Rhoads, C. P.; Hiller A., and Alving, A.: The Relationship of the Urea Clearance to the Renal Blood Flow, Am. J. Physiol. *110*:387, 1934.

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News Notes

Colonel Wickliffe to Head WMSC. Announcement has been made by the Army of the appointment of Nell Wickliffe, a dietitian, as Chief of the Army Women's Medical Specialist Corps. Colonel Wickliffe, on assuming this position on December 3, was promoted from the rank of major to that of full colonel. She received her training at Walter Reed Army Hospital in 1929, and, upon completion of her course, was appointed a dietitian at Station Hospital, Fort Sam Houston, Texas, where she remained for sixteen years. She became Chief Dietitian at Walter Reed Army Hospital, Washington, in 1946, serving there until she was transferred to the Far East in 1948, where she has been Chief Dietitian of the Japan Logistical Command and Dietetic Consultan to the Far East Command. Colonel Wickliffe holds the Legion of Merit, awarded November 20, at the completion of her three-year tour of duty in the Far East. As Chief of the WMSC, she will direct Army dietitians, physical therapists, and occupational therapists.

Colonel Wickliffe succeeds Colonel Emma E. Vogel who retired on November 30, after serving as the first chief of the WMSC. Colonel Vogel, a physical therapist, has had a long and distinguished Army career. After the first world war, she helped to organize at Walter Reed Army Hospital the first postwar training course in the U. S. for physical therapists. In 1942, she helped to effect an organization of physical therapists under the Office of the Surgeon General, and in 1943, she was appointed a Major, thus becoming the first military head of Army physical therapists. She has been awarded the Legion of Merit for her organizational work. In 1947, when the WMSC was activated by Congressional law, she was appointed its first chief.

***Journal* Face-Lifting.** All readers of the JOURNAL will have noticed the new cover which makes its bow with this issue. The new design was chosen from among several sketches submitted by Waverly Press. The editors, Journal Board, and Executive Board of the Association hope that the change will be favorably accepted and that it will help to win friends for the Association.

University of California Nutrition Symposium. Nutrition was the theme of a symposium held by the University of California School of Medicine in San Francisco on October 30. The symposium, endowed by the National Vitamin Foundation, was divided into two parts, "Nutrition in Diseases of the Digestive Tract" and "Nutrition, Disease and Geography." The first session included the following speeches:

"Some Factors Related to Intestinal Absorption"—Dr. Perry J. Culver, Harvard Medical School

"Nutritional Aspects of Hepatic Disease"—Dr. Robert M. Kark, Professor of Medicine, University of Illinois College of Medicine

"Influence of Pancreatic Insufficiency on Nutrition"—Dr. Heinrich Necheles, Professorial Lecturer, Department of Physiology, University of Chicago

"Nutritional and Metabolic Disturbances in Ulcerative Colitis"—Dr. Jacob A. Bargen, Professor of Medicine, Mayo Foundation

The second session included:

"Some Aspects of Nutrition in Relation to Tissue Devitalization and Maintenance"—Dr. Fredrick J. Stare, Harvard School of Public Health

"Some Features of Tissue Changes Induced by Nutritional Deficiences"—Dr. Paul R. Cannon, Professor of Pathology, University of Chicago

"Some International Economic Aspects of Nutrition"—Dr. John B. Condliffe, Professor of Economics, University of California, Berkeley

Miss Reed Honored. Rachael L. Reed, Director of Consumer Relations, The Borden Company, New York City, was cited on October 30 by Drexel Institute of Technology for business and professional leadership in the field of home economics. She was honored as a graduate of Drexel at a three-day convocation celebrating its sixtieth anniversary. Miss Reed, an A.D.A. member since 1934, was one of sixty alumni awarded citations for various civic and professional accomplishments.

Dr. Stare Honored. At the recent meeting of the Grocery Manufacturers of America, Dr. Fredrick J. Stare, Chairman of the Department of Nutrition, Harvard University School of Public Health, received the organization's 17th Annual Scientific Award. This honor is bestowed annually on the scientist whom the GMA feels has made the most outstanding contribution to the science of nutrition.

Rose M. Simmonds. The British Dietetic Association reports the death on October 12 of Rose M. Simmonds, a nurse and dietitian who helped to found that Association. Miss Simmonds, as a nurse at the London Hospital, in 1922 administered the first dose of insulin to a patient, and as time went on observed the influence of more liberal diets on diabetic and gastric patients and others. In 1925, she was awarded the first traveling fellowship, which the Rockefeller Foundation had offered to the London Hospital, for a trained nurse to study dietetics in America—and she thus became the first trained dietitian to work in the United Kingdom. During the illness of King George V in 1928, she became a member of the nursing team at Buckingham Palace "when," to quote Lord Dawson of Penn, "we were almost in despair of getting sufficient nourishment into the patient." Miss Simmonds was Chairman of the British Dietetic Association from 1944 to 1946, and Chief Editor of *Nutrition: Dietetics: Catering* from 1949 until the time of her death.

Civil Defense Conference. Food problems in the event of atomic attack were discussed by representatives from the United States, Canada, and Great Britain at the Conference on Administration and Scientific Problems of Food Aspects of Civil Defense held in London, November 23 through December 13. Emergency institutional feeding, nutritional therapy for patients suffering radiation burns and other trauma under disaster conditions, emergency provisions for patients on special diets, and food requirements of civilians in a bombed city were among the subjects considered. The United States delegation included federal, state, and local civil defense officials; American Red Cross officials; food, nursing, and nutritional experts from the U. S. Public Health Service, Department of Agriculture, Federal Security Agency, and Bureau of the Census; and a special advisor from the Paper Cup and Container Institute.

Plentiful Foods. The U.S.D.A. has announced that the following foods will be plentiful during January:

Protein foods	
Buttermilk	Pork and pork products
Cheese, cottage	Tuna, canned
Milk, nonfat dry solids	Turkeys, heavy, and hens
Perch, ocean, frozen fillets	Whiting
Other foods	
Almonds	Oranges
Beans, dry (baby Limas and Navy)	Pecans
Honey	Prunes, dried
Orange and grapefruit slices	Raisins
	Rice
	Tangerines

"Food After Fifty." The Nebraska Dietetic Association, as a joint project of the Diet Therapy and Community Nutrition Sections, has prepared a mimeographed booklet titled "Food after Fifty." Written to help operators or managers of homes for the aged or infirm and of other small institutions in Nebraska, the booklet contains suggestions and easily-digestible scientific nutritional information. The "Basic Seven" are listed; one sample daily meal plan and several sample supper plans are presented. General points

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Kitchen operators everywhere, like those recommended by Duncan Hines, place Garland first; *proof* that from every standpoint your choice of Garland is the right choice. See the Line of The Leader at your Food Service Equipment Dealer.

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to consider in feeding elderly people are given. Equivalents in measures and weights are tabulated, and a short bibliography is included. Copies may be obtained on request to the Nebraska State Health Department, Capitol Building, Lincoln.

Manual on Mass Feeding in Emergencies. The District of Columbia Dietetic Association has worked out a fifty-one-page, mimeographed manual of basic information for dietitians for use in emergency mass feeding in hospitals in the District. In it are comprehensive plans worked out specifically for that area. However, the approach to the problem should prove helpful to other groups. Lists of equipment, supplies, and foods are included, as well as typical emergency menus, recipes, and diagrams for outdoor cookery and suggested methods for icing foods or keeping them hot. The problem of management of volunteer help is also considered, as well as sanitation and safety precautions. Copies may be obtained for $1 each from Marjorie Beattie, C. & P. Telephone Company, 725 – 13th St., N.W., Washington, D. C.

Department of Agriculture Releases. *Recipes for Quantity Service* (PA-178, September 1951, Food Service IV) has recently been issued by the Bureau of Human Nutrition and Home Economics, U.S.D.A. The twelve recipes were tested in the Bureau's institutional recipe laboratories for practicability, sales appeal, and consumer acceptance in commercial and other types of food service. Some are low-cost recipes for institutions on small budgets. Quantities have been adjusted insofar as is possible to eliminate fractions. Portion sizes, weights, and yields have carefully been checked. Most recipes are given in terms of 25, 50, and 100 portions, with weighing rather than measuring recommended. This booklet can be obtained from the Government Printing Office, Washington 25, D. C.

Apples in Appealing Ways is another recent publication of the Bureau. It is Leaflet No. 312, prepared by Mary T. Swickard. Selection and storage of apples are discussed on the first page; a chart is presented giving twelve of the widely marketed varieties of apples, with season, size, description, and use listed; and recipes, mainly for four servings, are given for using apples in main courses, salads and dressings, bread, cookies, desserts, and snacks. This leaflet, which supersedes the unnumbered publication, "Apple Recipes," can also be obtained from the Government Printing Office for 10 cents a copy.

The Extension Service, U.S.D.A., has issued a set of eleven attractive four-page, $3\frac{3}{4}$ by $4\frac{3}{4}$ leaflets printed in two colors, on selection and use of various fruits and vegetables. Titled "How to Choose and Use...." (potatoes, cabbage, peaches, pears, dried prunes, grapefruit, oranges, apples, snap beans, tomatoes, onions), the leaflets have been prepared to give consumers information on the foods listed above, including the following points: desirable appearance, yield, nutritive value, and directions for storage and plain cooking. They are being distributed by Extension Service workers and through the state land-grant colleges. They carry PA numbers ranging from 120 to 163.

The Bureau of Agricultural Economics and the Fruit and Vegetable Branch, Production and Marketing Administration have released *Consumer Buying Practices for Selected Fresh Fruits, Canned and Frozen Juices, and Dried Fruits, Related to Family Characteristics, Region, and City Size, April-September 1950.* This report contains twenty tables relating to volume and price of purchase and percentages of families buying different juices and fruits. Data include figures on buying practices of families as related to geographic region and size of city, income, family size, age of children and housewife, and occupation and education of the head of the family.

Pacific Islands Bibliography. *Pacific Islands Nutrition Bibliography* is the title of a new booklet published by the University of Hawaii Press, Honolulu, containing 207 references on food problems and needs in the Pacific Islands. The references, which date from 1784 through 1950, were compiled by Capt. Robert Joseph Fanning, Dental Corps, U. S. Army, and the foreword was written by Carey D. Miller. Hawaii Agri-

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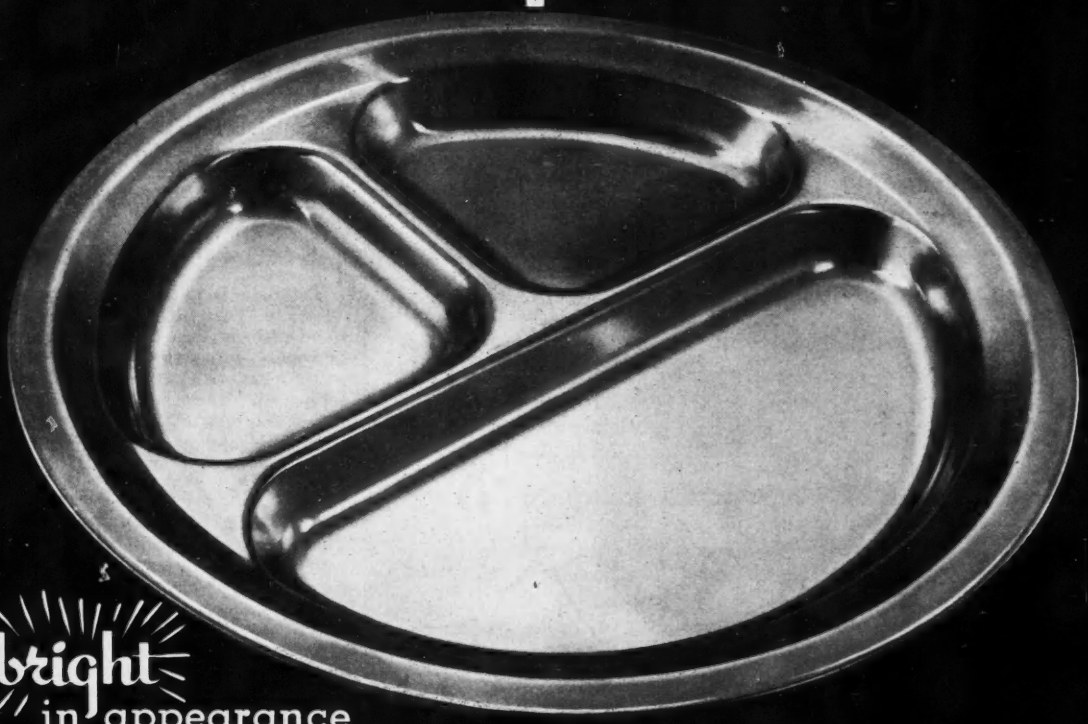

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cultural Experiment Station, who planned the project. The booklet was prepared in response to a recommendation offered by the Division of Public Health and Nutrition at the Seventh Pacific Science Congress in New Zealand in 1949, that "an annotated bibliography . . . relating to food analyses and diet studies in the Pacific Islands be . . . published." The subject matter includes publications of all types relating to: chemical composition; dietary studies; nutritional status of different groups, including dental conditions; studies of energy metabolism; physical standards (heights and weights); and lists of foods with descriptions, methods of preparation, and extent of use.

Filmstrip on Beef. "When It's Your Turn at the Meat Counter" is the title of a new colored filmstrip prepared by the U. S. Department of Agriculture. Developed by the Livestock Branch, Production and Marketing Administration, which administers the federal meat grading program, the filmstrip will help consumers in buying and using beef, by explaining the grading program for beef. Copies of the filmstrip (USDA Catalog No. C-16) may be purchased at $4 each from the Photo Lab, Inc., 3825 Georgia Avenue, N. W., Washington 11, D. C. A set of mimeographed lecture notes accompanies each copy.

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News of State Associations

Arkansas Dietetic Association. "Psychosomatic Medicine as Related to Dietetics" was the topic when Dr. Frances Howard, Arkansas State Hospital, Little Rock, spoke at the November meeting of the Arkansas Dietetic Association. Officers of the Association for 1951–52 are: President, Christina Doyle Spear, Arkansas State Board of Health, Little Rock; President-Elect, Isabel Hahn Hamilton, VA Hospital, Little Rock; Secretary, Mary Toland, Arkansas State Board of Health, Little Rock; and Treasurer, Mary K. Lehman, Davis Hospital, Pine Bluff.

California Dietetic Association. The convention of the California Dietetic Association was held November 3 in Berkeley. Dr. William W. Stiles, Chief of Medical and Health Services, California Civil Defense Program, was guest speaker.

Colorado Dietetic Association. The Colorado Dietetic Association sponsored a booth at the Colorado State Fair in August, with a threefold aim: (a) the recruitment of dietitians; (b) community service in promoting good nutrition; and (c) building of good public relations. Vocational guidance slides from the A.D.A. office were used as the keynote of interest.

Connecticut Dietetic Association. The Connecticut Dietetic Association held its fall meeting in New Haven, November 7. Teaching of student nurses was the theme. The new Executive Board has also recommended that a spring workshop be held for the continuance of this subject, owing to the interest shown in it at the meeting. Speakers were: Josephine Dolan, Department of Nursing Education, University of Connecticut, and Henderika Rynbergen, Cornell University School of Nursing, Ithaca, New York.

Hiram Sibley, Executive Director, Connecticut Hospital Association, addressed the group on the place of the hospital in the civil defense program. One of the exhibits at the meeting was a display showing a sample two-day stockpile for a family in the event of disaster.

Florida Dietetic Association. Jacksonville was the scene of the Florida Dietetic Association's Annual Meeting, October 26 and 27. Lucille Refshauge, Speaker-Elect of the House of Delegates, A.D.A., was the Association's official representative. The program included a discussion, with slides, of "The Relation of Soil Fertility to Plant and Animal Nutrition" by Dr. George K. Davis, University of Florida, and "A Survey of Homes for Old People in Florida" by Dr. Robert Kleemeier, Moosehaven. The latter was based on a survey made by Dr. George E. Myers, also of Moosehaven. Members and guests participated in a television program and a trip through the Maxwell House Coffee plant. A smorgasbord banquet was

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RECENT assays[1] emphasize the nutritional superiority of reconstituted Minute Maid Fresh-Frozen Orange Juice over home-squeezed orange juice in three important respects:

a. Average levels of natural ascorbic acid were significantly *higher* in Minute Maid;

b. Peel oil content was significantly *lower* in Minute Maid;

c. Bacterial counts were dramatically *lower* in Minute Maid.

Two chief reasons for Minute Maid's higher ascorbic acid content are advanced by qualified technical experts:

First, oranges vary widely in ascorbic acid content due to differences in varieties, rootstocks, and exposure to sunshine during ripening.[2] Thus, whole oranges, squeezed a few at a time in the home, provide a highly erratic source of Vitamin C. Yet because this vitamin is not well-stored in the body, optimum nutrition makes desirable a uniformly high intake. Each can of Minute Maid, however, represents the pooling of juice from hundreds of thousands of oranges; thus wide variations in nutrients from orange to orange tend to be eliminated.

Second, because it is frozen, Minute Maid loses none of its ascorbic acid content during the time lag between producer and consumer.[3] Whole fruit, however, is subjected to variations in temperature, and care in handling cannot be maintained throughout the journey from tree to table. Controlled laboratory tests have shown an average ascorbic acid loss of 10.7% in whole oranges after 11 days under simulated storage and shipping conditions.

Peel oil, previously shown to cause allergic response and poor tolerance, especially in infants,[4] is held to an arbitrary minimum in Minute Maid. Samples of home-squeezed juice expressed by typical housewives showed peel oil contents up to 700% higher than Minute Maid.

Bacterial counts were found to be as high as 350,000 per ml. in home-squeezed samples—but were uniformly low in Minute Maid. Technicians ascribe this to the combination of rigid sanitary controls in the Minute Maid process and the low pH and low temperatures at which the juice is kept. In the case of home-squeezed juice, high bacterial counts are doubtless due to contamination from the exterior peel which is unknowingly added to the juice during preparation.

In view of the above findings, more and more physicians now specify Minute Maid Fresh-Frozen Orange Juice in lieu of home-squeezed orange juice where optimum year-around intake of natural Vitamin C is indicated.

REFERENCES

(1) *Rakieten, M. L.,* et al., *Journal of the American Dietetic Association, October, 1951.*

(2) *U. S. Department of Agriculture Technical Bulletin No. 753, December, 1940.*

(3) *Roy, W. R., and Russell, H. E., Food Industries, Vol. 20, pp. 1764-1765 (1948).*

(4) *Joslin, C. L., and Bradley, J. E., Journal of Pediatrics, Vol. 39, No. 3, pp. 325-329 (1951).*

Reprints of Reference Material Mailed on Request

MINUTE MAID CORPORATION, 488 Madison Ave., New York 22, N. Y.

Wallace R. Roy, Ph.D., Director of Research

held at Jacksonville Naval Air Station, where Dr. Frank Goodwin, University of Florida, discussed sales techniques in a speech titled "Little Things Count."

"Human Relations" by Dr. Donald Lundberg, Florida State University, and "Some Techniques in Teaching Adults" by Dr. Gladys Gallup, U. S. Department of Agriculture, highlighted the closing session of the meeting.

Officers and section chairmen are: President, Vera Walker, Florida State Welfare Board, Jacksonville; President-Elect, Dr. Helen Cate, Florida State University, Tallahassee; Vice-President and Food Administration Chairman, Dorothy Monroe, VA Hospital, Lake City; Secretary, Gladys E. Hall, Florida State University, Tallahassee; and Treasurer, Alice L. Cromartie, State Home Demonstration Office, Florida State University, Tallahassee. Ada Stanich, St. Lucie County Health Department, Fort Pierce, is Community Nutrition Chairman, and Diet Therapy Chairman is Ruth Pontius, VA Hospital, Coral Gables.

Georgia Dietetic Association. The fall meeting of the Georgia Dietetic Association was held November 2 in Athens. The program included a film "Losing to Win" dealing with overweight, by the Metropolitan Life Insurance Company, and a tour of the University of Georgia's School of Home Economics. The following speeches were presented:

"Report on the Corn Meal Enrichment Program"—Dr. C. C. Murray, Dean, College of Agriculture, University of Georgia, Athens

"Recent Trends and Developments in Nutrition"—Dr. Pauline Wilson Knapp, Dean, School of Home Economics, University of Georgia, Athens

"Dietary Treatment in Burns"—Dr. John H. T. McPherson, Medical Center, Athens

"Food Cost, Control of Price, and Buying Futures"—A. C. London, Executive Secretary and Treasurer, Georgia Wholesale Grocers Association, Macon

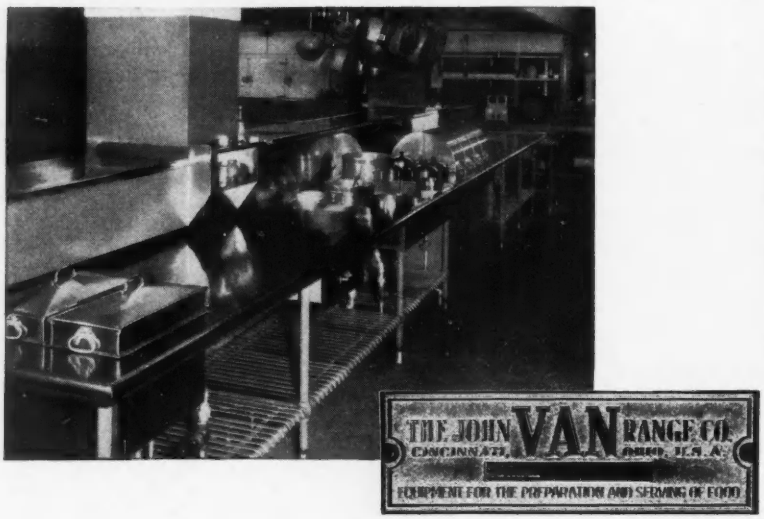
New officers of the Georgia Dietetic Association are; President, Priscilla Reynolds, Grady Hospital, Atlanta; President-Elect, Frances Boon Koeth, American Red Cross, Atlanta; Secretary, Helen Wolfe, Savannah; and Treasurer, Marie Townsend, University of Georgia, Athens.

Louisiana Dietetic Association. The *Shreveport Section* of the Louisiana Dietetic Association held its first fall meeting on October 9. Plans were made to participate in the spring Career Day programs of three colleges in the vicinity. Officers for 1951–52 were elected at this meeting. They are: President, Doris Heard Farrar, Schumpert Sanatorium; Vice-President, Macie Lee Dorsey; Secretary, Dorothy Love, VA Hospital; and Treasurer, Frances Hazzard, VA Hospital.

Massachusetts Dietetic Association. "Advancement Means Responsibility" is the theme of the Massachusetts Dietetic Association's 1951–52 program. The first meeting of the year, sponsored jointly by the Association and the Massachusetts Home Economics Association, was held in Boston on September 28 and featured Ida Jean Kain who discussed "Controlling Your Curves." The October meeting was held at the New England Deaconess Hospital's Cancer Research Institute in Boston, October 30. "A Child Learns to Eat" was Dr. Miriam Lowenberg's topic at the November meeting at Simmons College. On January 15 the group will hear E. C. Crocker of Arthur D. Little, Inc., Cambridge, on the subject, "Flavors Add Interest to Meals."

Future meetings will include: February's Professional Education Meeting; a joint meeting on March 24 of the Association and the New England Hospital Assembly where F. C. Houghton, Administrator, Rutland (Vermont) Hospital, and Geneva L. Marble, President of the Association, will jointly preside for a panel titled "Cooperative Ventures in the Dietary Department"; and a Diet Therapy Institute, March 27 and 28.

Michigan Dietetic Association. The fall meeting of the Michigan Dietetic Association was held November 8 in Grand Rapids. The program included: a panel discussion on "The Dietary Implications in the Use of Cation Ex-



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change Resins in the Control of Sodium Metabolism," with Dr. Noyes L. Avery, Jr., Grand Rapids, as chairman; and a film "Weight Reduction Through Diet" with comments by Dr. Wilma D. Brewer, School of Home Economics, Michigan State College, East Lansing. Bernice Berg and students, Grand Rapids Junior College, discussed "Training Auxiliary Dietary Personnel," and "Techniques in Food Merchandising" was the topic of Mildred Johnson, Director, Food Department, Wurzburg's, Grand Rapids.

Missouri Dietetic Association. The Missouri Dietetic Association, at its Executive Board meeting in October, selected Dr. Bertha Bisbey to be the recipient of a token of appreciation of her contribution to nutrition and dietetics. The gift, a silver tray with an inscription, was presented December 8 at a luncheon in Dr. Bisbey's honor in Columbia, Missouri.

The *St. Louis Dietetic Association*, in cooperation with the St. Louis Diabetic Association, presented an exhibit of tasty meals for diabetic persons at the St. Louis Medical Society auditorium on November 13. Twelve local hospitals participated, as did restaurants and the St. Louis Dairy Council. Exhibits included "Normal] Restaurant Meals Compared to Diabetic Meals," "Commercial Foods for the Diabetic," "Packed Lunches for the Diabetic," and several exhibits dealing with food exchanges.

New York State Dietetic Association. Rochester was the scene of the Executive Board meeting of the New York State Dietetic Association, September 22. Ethel Lewis Marth, American Red Cross, program chairman, outlined plans for the 1952 convention to be held April 24 and 25 in Rochester.

Officers of the *Buffalo Dietetic Association* for 1951–52 are: President, Esther Freudenheim, Buffalo General Hospital; Vice-President and President-Elect, Dorothy Phelps, Buffalo General Hospital; Secretary, Ruth Cottringer, VA Hospital; and Treasurer, Harriet Hahl, Edward J. Meyer Memorial Hospital.

The *Greater New York Dietetic Association* has elected these officers for 1951–52: President, Alta B. Atkinson, Teachers College, Columbia University, New York City; Vice-President, Dorothy G. Williams; Secretary, Rose Rutchik, Beth Israel Hospital, New York City; and Treasurer, Marie C. Wojta, VA Hospital, Bronx.

The *Hudson Valley Dietetic Association* met October 8 at the Albany VA Hospital. Dr. Frank Woolsey spoke on "The Service of Veterans Administration." At the November 5 meeting, Wintress Dalbey Murray, President Elect of the New York State Dietetic Association, addressed the group on "Let's Talk Shop." Officers for the coming year are: President, Marie Vouaux Muller, Albany; Vice-President, Mary K. Conklin, New York State Department of Health, Albany; Secretary, Kathleen M. Tuohey, Dairy Council of the Capital District, Menands; and

At a Valentine Party, or any other time, *this* DOLE Pineapple Upside-Down Cake will win the oh's and ah's! Everybody will love it because it's extra-thick and extra-luscious. We're going to feature this Double-Decker Upside-Down Cake in our color advertisement in national magazines for February, but there's time before then for you to present it to your classes.

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A Two-Layer Pineapple Upside-Down Cake

First, prepare the Upside-Down Topping: In each of two 8" round or square cake pans, melt 3 tablespoons butter or margarine, and sprinkle each with ½ cup brown sugar.

Now, drain a No. 2 can (2½ cups) DOLE Pineapple Tidbits or *crisp-cut* Crushed Pineapple. Arrange half of the drained pineapple over the topping in each pan.

Next, make the cake batter using your favorite recipe, or mix ½ cup evaporated milk and ½ cup water with one package of cake mix. Pour equal quantity of cake batter over pineapple in each pan. Bake for 15 minutes at 350°, then reduce temperature to 325° and continue baking for 20-25 minutes, or until done.

Cool on cake racks for 10 minutes, then loosen sides with a spatula or kitchen knife. Turn one layer out on a cake plate. Turn the second layer out slowly on top of the first layer, being careful to guide it so that one layer is stacked evenly on the other. If desired, decorate with halves of maraschino cherries arranged in the form of a heart for Valentine's Day. Serve warm with *unsweetened* whipped cream, passed separately. Makes 6 to 8 servings.

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Treasurer, Pearl Austin, Albany Hospital, Albany.

The *Mid-Hudson Dietetic Association's* officers, all of Poughkeepsie, are: President, Winifred Bouvet, Vassar Brothers Hospital; Vice-President, Frances Bacon, St. Francis Hospital; Secretary, Dorothy Burkowski, Oakwood School; and Treasurer, Mrs. Richard Murray, International Business Machines Corporation.

This year's officers of the *Rochester Dietetic Association* are: President, Wintress Dalbey Murray, Eastman Kodak Company; President-Elect, G. Gwendolyn Taylor, Strong Memorial Hospital; Vice-President, Sadie Lipman; Secretary, Doris Elaine Johnson, Highland Hospital; and Treasurer, Janet Jackson, The Genesee Hospital.

The *Utica Dietetic Association* has the following officers for 1951–52: President, Ruth Winne; Vice-President, Anne Linder, St. Elizabeth's Hospital; Secretary, Jeannette Jones, Masonic Hospital; and Treasurer, Alice Lawlee, Rome.

Oregon Dietetic Association. The annual meeting of the Oregon Dietetic Association was held November 3 at Eugene. The program included a talk by Dr. Robert A. Aldrich, Assistant Professor of Pediatrics, University of Oregon Medical School, on "Newer Concepts in Interrelations of Nutritional Elements," and a discussion of "Equipment and Layouts" by Mary W. Northrop, Head, Dietary Department, King County Hospital, Seattle.

Officers for 1951–52 of the Oregon Dietetic Association are: President, Buena Council, Portland; Secretary, Barbara Bogue Norman, Portland; and Treasurer, Dorothy B. Steen, Emanuel Hospital, Portland. Section chairmen are: Community Nutrition, Annabel Rickard, University of Oregon Medical School, Portland; Diet Therapy, Ann Clare Stirniman, Multnomah County Hospital, Portland; Food Administration, Gladys B. Swenson, VA Hospital, Portland; and Professional Education, Georgia Bibee Peavy, Corvallis.

Association Activities

A.D.A. Participates in A.M.A. Meeting. The Clinical Session of the American Medical Association was held in Los Angeles, December 4 to 7. A.D.A. cooperated in an exhibit symposium on "Overweight, Nutrition, and Health," along with the American Medical Association; Department of Nutrition, Harvard University School of Public Health; Metropolitan Life Insurance Company; and the U. S. Public Health Service. Our exhibit on the adequate low-calorie diet was shown; the symposium was similar to that presented at the June meeting of A.M.A. in Atlantic City.

Question and answer conferences accompanied the presentation of exhibits. Several A.D.A. members spoke at these conferences:

Clara Zempel—"Low-Calorie Diets, Practical Hints"
Dolores Nyhus—"Teaching Diabetic Patients"
Helen E. Walsh—"Group Therapy in Obesity—Principles and Experiences"
Martha Trulson—"Food Fads and Fallacies"

Members of the Los Angeles Section of the California Dietetic Association cooperated by setting up and manning the A.D.A. booth. Our official representative, Clara Zempel (A.D.A. Professional Activities Director) directed the activities at the booth.

Our Representatives. Margaret A. Ohlson and Helen A. Hunscher attended the meeting of the *Food and Nutrition Board* in Washington, D. C., November 9 and 10. Dr. Ohlson is a member of the Board; Dr. Hunscher is the Association's liaison representative.

A meeting of the *Joint Committee of A.D.A. and the American Hospital Association* was held in Chicago on November 20. Our representatives included Vivian L. Laird, Miami Valley Hospital, Dayton; Sarah Campbell, Montgomery Hospital, Battle Creek, Michigan; and Wilma Robinson, Illinois Department of Health, Springfield.

Helen S. Mitchell represented the Association at the annual meeting of the *American Association for the Advancement of Science* held in Philadelphia, December 26 to 31. Dr. Mitchell is a Fellow of AAAS.

A.D.A. Mid-Year Meetings. The Association's Executive Board, Coordinating Cabinet, and Finance Committee will hold their respective meetings February 14 through 16, in Chicago.

Curriculum Project Fellowship. The fellowship in foods and nutrition which is to be given at Iowa State College for the furtherance of the curriculum study started by the directors of approved dietetic internships (see News Notes, December, 1951, page 1092), has been given publicity through various means. A flyer was included with the December *Vocational Guidance Newsletter* which goes to vocational guidance chairmen, state and local presidents, public relations chairmen, professional education chairmen, and editors of state bulletins. In addition, a mailing was made to the directors of approved dietetic internships.

Historical Additions to Library. Helen J. Phaneuf, Chief Nutrition Consultant, Connecticut Department of Health, has recently donated the following books to the Association for their historical value:

BROWN, G.: *Scientific Nutrition Simplified.* New York: F. A. Stokes Co., 1908.

GIBBS, W. S.: *Food for the Invalid and the Convalescent.* New York: Macmillan Co., 1912.

SMITH, E.: *Foods.* New York: D. Appleton & Co., 1873.

These books are currently being held with Dr. E. Neige Todhunter's collection of historical incunabula.

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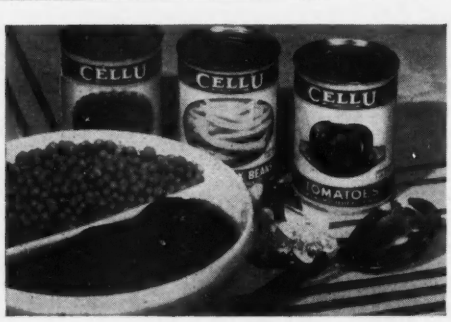

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